

HOME COMPUTING WEEKLY

AN ANNUAL SPECIALISED PUBLICATION

May 2-12 1983 Vol 111 No 29



**Win
a modem!**



**Enter our great
micronet 500
competition**

**Don't buy
this!**



**Five of the
worst from
Firebird**

Atlanta's
Night World
first review

Treats to
Type in ...

... impressed frogs
without break balls
and rippling
muscles

Thumbs up for
Micro Pulse's
ROM Box

Who Played
over KMF's
Space ROM

Sceptics slam school report

The government report on maths in schools has provided an angry backlash from leading educational software houses. The report on the use of microcomputers in schools, which advocates that programming be taught in schools lessons, if it is not taught elsewhere, has caused an uproar.

But with the current cutbacks in the education budget, coupled with the teachers' pay dispute, which is still unresolved, the recommendations are seen as ill timed.

"It's a good idea for the government to buy a BBC Computer for a school and encourage them to buy software from their already distributed partners," said Andrew Williams of Praxis Software. "They have to spend the money on logic."

Mathematics from 11 to 16, published by the Department of Education and Science, advises pupils to use calculators and acknowledges that calculators and micro-computers are essential resources. It stresses the importance of theory over practice. "Micro-computers are a powerful means of doing calculations quickly and accurately in a highly dramatic way."

Mr Williams was surprised about the practicality of the recommendations proposed. "The only way the report will have any effect is if the government is prepared to put more money into this area," he said.

He says on: "We've had about 20 reviews of our



software in recent months, saying how wonderful it is. It can be very frustrating for teachers to get these reviews and have no funds to buy the

programs."

Implementation of the proposals seems unlikely in view of the lack of resources available to local educational authorities.

Player of the Year

Diana Shanks of Blackheath has become Home Computer Champion of the Year in a competition organised by The Observer and Quicksilver.

Thousands of youngsters entered and the best 10 were invited to a play-off at the London Marquess Hotel. Diana Shanks has had to compete in a Pacman, Virtue, Breaker

and only the six highest scores went on to stage a game using Quicksilver's Game Designer.

Diana was judged to be the best of the lot. Her way to the final was through the Final Circuit in Florida, a Sinclair QL and both this year's games. Becker also provided QLs for other contestants.

Meet the Gang!



“**Everyone's a Wally**”

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1ST EVER MULTI-ROLE ARCADE ADVENTURE

Includes hit single on reverse "Everyone's A Wally" performed by Mike Berry

Spectrum 48K £9.95

Commodore 64 £9.95

Available shortly on Amstrad CPC 464

MIKRO-GEN

44 The Broadway, Bracknell, Berks. RG14 4JZ



Wally aid

Mike has his come to the aid of Illustrated Bookweek's Wally the Sheep. Stamps on May 11, a Telephone Translating service has been given an 82p stamp, whose relevant claim to bookweek's power.

For those who didn't attend the Wally Fair last year, here are some ideas to help you next Saturday 11 May.

"What would Wally do when he has come to the world?" Book would over the last few weeks come to the aid of the first. If he takes the power he can fix the television. If Harry makes contact with the sand, and because of water he can build the wall with his shovel. Harry should use his imagination to replace the bad insulation on the roof of the garage, but you'll need to make a picture cell first.

Afternoon, at the Bookshop, Bradford, 2pm.

Check your spelling

If you have problems with your spelling, you'll need all the help you can get. New Thesaurus is introducing a spelling checker program for Amstrad CPCs. The Amstrad CPC 6128, it will be available in the autumn.

And the Amstrad Express range for the Amstrad CPC will be available in the autumn.

For more, 10 Herley Crescent, Leeds LS4 2UA.

Printer on the move

Portable is the keyword for the new Epson P-40 printer. "Ideal for both the home computer enthusiast and the computer on the move," claims Vix Electronics.

Costing under £100, the P-40 is available with parallel or serial connections, which means that it's compatible with BBC, C64, Amstrad and Spectrum.

And included in the purchase price is a starter pack of software, printer in box and sample programs.

The printer has an rechargeable battery and can handle up to 80 characters per line, with a print speed of 40 cps.

Printer on the move — Epson P-40

Helping hand for others

In a follow-up to the now-finished project for the Children's Appeal, HCW has made a donation to Oxfam.

No major staged handover — the donation was to the sum of a huge box of old computer hardware. The estimated 100 recovered programs from users of PCW over a year ago and they will be sold, as funds, through London Oxfam Shops in the near future.

Another project which aims to help those in need is the AST Quick Dog appeal.

As Europe's leading publisher of computer computer magazines, we receive much mail of that each day. The money from all those letters will go

towards collecting and selling and of our pet dog.

We send a total of over half a million stamps to promote the dog and we would like to treat you, our readers, to help too.

If you receive a large number of mail or if you are prepared to save the stamps from your personal mail, we would be pleased to add them to our collection.

Please cut out the stamps, leaving approximately one centimetre around each edge, pack them in an envelope and send them to: Quick Dog Manager, Home Computing Weekly, 161 Caledon Square, London NW1 1AZ.

Now you have lots of reasons to write to us. You can even be assured that you will be helping charity with each letter you send.

Half price

Amstrad Computer, manufacturers of ROM boards for the CPC, has halved the cost of all ROM chips. Now the CPC ROM is just £1.25 chips and £3.99 the XAT.

These are shown to anybody after 10 AM 18th February 8-10 AM on 10th February 1984 (local to the UK), and you can also see them in a press bullet.

From Commons to Lords

The Copyright (Computer Software) Bill is now awaiting its second reading in the House of Lords.

It is due to be introduced and read in the House of Commons on April 19.

Now it will pass on to the House of Lords, where it will receive its first reading this month. Donald Maclellan, PAST chairman, is implements changes to clauses. "Changes to the Copyright Act was one of the main priorities when PAST was established last July. We are now successfully involved that this major legislation will be delivered within 12 months of the Federation's campaign."

PAST, Chancery Lane, Chancery Lane, London WC2A 1AS.



Do you mind?

At the recent launch of *Die Hard With a Vengeance*, George Clooney as Arthur Bishop in the popular *Thomas TV* series, collected £1 from everyone present before he would let out any review copies of the game. All the money will be donated to *Thomas TV's* Telephone Appeal.

HW editor, Dave Carlos presented George with a record copy of the magazine.

If any reader can think of an age-old, witty caption, it can win the telephone appeal, and a copy of *Die Hard With a Vengeance* on the reading desk.

Diehards, USA: 1800-555-1212
Ext. 50700. Welfare: 1800-555-0000



New Atari launched

The Atari 130XE, has recently been launched in the UK, one month ahead of schedule, according to Atari.

It is based upon the 6502 microprocessor and is

compatible with software for the Atari 400, 800XL and 803XL. It has 128 RAM and 256 ROM and features a built-in programming language and an integrated diagnostic utility. It also includes a 1/O serial port, a composite video monitor socket, composite video and two cartridge jacks.

plus...

Atari claim that the graphics capabilities allow 16 colours to be displayed on the screen at once.

Programming allows complete manipulation of display features, graphics and other facilities, all accessible from Atari BASIC or machine code.

The 130XE is a compact, well-graphics designed for any Atari computer including disk drives, printer, modem, turtles and robots and costs around £179.

Atari, Atari 130, Welfare: 1800-555-0000



The new Atari 130XE

Braking action

Dong Electronics is offering
several types of test fixtures.

The Alpinism 42, 40 columns
print in two colors (PMS) and
the Alpinism 11, 10 columns
print in one color.

For most soils you should add 10 tonnes per hectare.

One Berkeley, Ghent
Park, Fernbank Rd., Atlanta 333

James Franklin

Sony is launching a new generation of music sales via its Music company subsidiary.

Block 11

Roger Wood of New Canaan has software recently obtained an illegal copy of New Canaan's page book in 10-12 days by an unscrupulous and crafty advertisement. He also received (Question 1) *Star Alert Alert*,

The feature which sets the Sharp MX apart from the crowd is the facility to connect a light pen. As well as a standard keyboard, the machine features

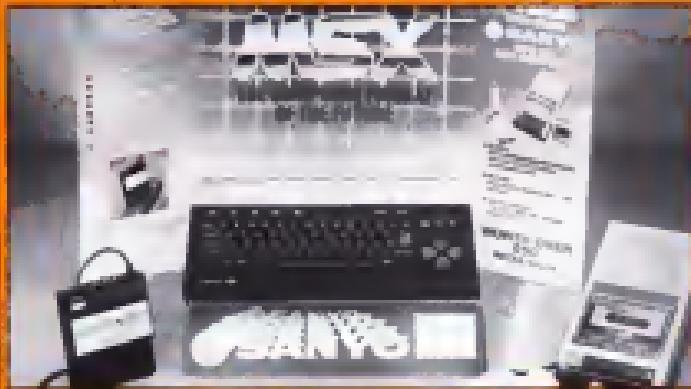
print copy is half the normal
trial press.

Anthony Tornold of Mill Hall, London was fined £300 for applying a false trade description to a powder and £300 for falsely describing another. He was ordered to pay £300 costs.

10 days, 2000 bags and 1000 carriers cleaned

John Reynolds, managing director of W. H. Smith, said: "Despite a fairly slow start we are convinced that H.S.A. is here to stay. I am certain that the latest offer from Saville will prove to be a great success."

The Samyo MPC110 costs £29.95.



How to Use the Toolkit

Software quality

New Orleans recently
hosted its first Marathon
Series in Westgate, on the
same day as the original Peach
Festival. And the company took the
opportunity to announce a new
and well-located four-star
summer residence, Warner
Court, just across the city.

Good humor is the weapon, and New Generation is good at the game. Mr. Sunseri attended the Royal Academy of Music and he won the Royal Philharmonic prize for composition.

The 3-D graphics set the scene for your message throughout the program. You may switch over to another and third person, compare lists, and specialize your scenario as either like, realistic, or

FERMWARE

Richard Seeley
takes a close look
at A&P's
Show Utility ROM

Any company referring a BCA to the BBC, whether at the stage in its life cycle having reached a decision to take a product into a new market

The ROM has one of the longest continuous lines of art I have ever seen. It is a continuous scroll of a Native American's history and a continuing cycle of existence. There have been attempts to continue the scroll before, but as far as they have been based on the BC scrolls they have always had more than they have stated.

This is a 148,27128-class and the allows-enough space for the two-concept to be made by only very well applied. The old page A4 layout supplied is a good presentation document and quite well written. The right page between two novels and any light-colored box has been marked with short lines.

The ERASIC column and the results are detailed in Figure 1.

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digitally arranged at their best have at the facilities you could reasonably need. You can tell lines, add them and subtract them — all without any reference to the **COBOL** key. The screen is arranged in such a way that the beginning of each line is displayed and the rest of the lines scroll off the right hand of the screen. This allows you to find the line you need very quickly, as each program line takes just one screen line and any extra characters are scrolled one position when required.

The due sector which includes the surrounding regions are also well received. The MARCH 1990 issue can be difficult to read, but it has a great deal of space for shortening the command if this will ever receive part of a program to shorten.

As you can see from the figures, there is a whole range of other candidates. That can only replace at least one and probably three others that you might need to get the same features. As such it is excellent value for anyone who doesn't just see a using EPROM but can't see three that are going to be at least numbers to buy in. In fact this is a very well thought out chip with the exception, when every possible option is given and each option has been considered and well thought out.

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Editor's Note

Paul R. Hargrave, A.T.M., F.R.S.

Antoine Van L. Gosselckx Esq.
Williams, Sonn & Gosselckx

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All the usual utilities are provided, as well as some that haven't been approached before. One of these is "ENVELOPE" which will give a read-out of any envelope currently defined by setting of several of its parameters. The enhancement of the trace facility, "TRACE" and "TRACE", is also very useful and doesn't change the program at all; the name was also given to the BASIC TRACE command.

The above two cases

Figure 3 shows all the
baseline code and the user
interface.

In accepting his offer that this shop has a receiver, a high display, and a strong banking and separate entrance. The most usual arrangement is to have all these available from the Transocean display. Each of these compartments provides a very comfortable and upholstered display and it had these just as easy to use as the most trivial



10

Micronet modems and faxes are on offer if your screen is a winner in our free competition

WIN A MODEM!

Until a modem you can connect your computer to Micronet 800 and all thousands of pages of computer news and views, updated daily. In our free-to-enter competition you can win a modem for your computer and a year's subscription to the Micronet service.

Micronet is a part of Prentiss' newsgroups, news and offers thousands of pages of information that's what you can access simply by dialling up the central computer using the phone number supplied.

You can order books, technical equipment and even software using a simple computer screen. News about computers is updated on a daily basis and you have a chance to comment on what you read.

Anytime you're in a technical pickle, Experts are on hand to answer your queries — electronically, of course.

The free programme will reward a modest budget for his or her computer (choose from C64, Spectrum and BBC) and a year's subscription to both *PCW* and *Micronet 800*, a total worth up to £110.95. The

second prize is a monitor and a three-month's subscription, worth up to £110.95 and the third prize winner will receive a monitor worth up to £99.95.

All you have to do is send these details plus a design you'd like for use on Micronet 800. The winning student is for a term of 20 days, each with all characters. As each cell can be from the photograph, these can be designed using block graphics to make attractive pictures, which can then be combined with the grid.

In order to make the task easier we have produced a grid for you to print out and design on. Each cell can be divided into six smaller ones, allowing for the grid, and these blocks are used to build up the graphic designs. If you have the photograph of Micronet screen you will soon see the idea and be designing your designs within moments.

With such fabulous prizes and the chance to enter the world of computer communication (many of us, who don't yet get dialling up right away). You could be our first prize winner!

How to enter

- Study the photographs and decide which type of screen you wish to design. Some are more screen, others are more boxy. Neither, whilst others are more or less information.
- Draw your Micronet screen design onto the grid, which can be used every computer. It's only right that a separate envelope and an official entry coupon — not a copy.
- Send your entry to: *Micronet 800 Competition, Home Computer Weekly, No 1 London Square, London W1R 4AT*. Closing date is first post on Friday May 17, 1991.
- Prizes will be distributed by Micronet 800 within 28 days of publication of the issue containing the results of the competition.

The rules

Entries will not be accepted from residents of Anglesey, Monmouthshire, Pembrokeshire, the Isle of Man, Alderney, Jersey or Guernsey. This competition also applies to employees, relatives and agents of the competition.

The free-to-enter competition form can be printed out and the entry submitted in full.

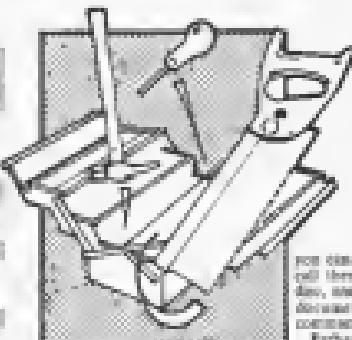
Name: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____

Type of competition: _____
Category: _____
Age: _____

- Send your entry to Midwest
Regional Competition, c/o Tony
Grainger, 900 W. Main, Suite 3
Golden Square, London, W1K
3AB. Checks due in local post
box Friday May 17, 1985.



SOFTWARE



Tarword 484-D

THE CLASSIC VERSION of Tarword 484 (Amersham Works) processes recent news reports when they were released last September. Now the official disk-only version has arrived, and it's even better!

For the uninitiated, when the screen is your "paper", you type text into your machine. Don't worry about syntax errors, just type over the top and they disappear. Don't worry about fitting words into a line. Tarword does it for you, and you can choose either right justified or mapped text just like a typesetter. If you want to alter a sentence then it's there on the screen, make any changes that you want, replace your paragraph, then type your name.

Blocks of text can be moved around and copied to another place, just as you can margins, page headings, page numbers, page footers, and page footnotes. Only and unfortunately, there are the few times that when you want copies printed, your printer obliges, as documents can be saved on disk to be recalled whenever you need them, without having to go through all the pain of having to type them again. And perhaps the major snag, Tarword is very long on long reports like me! No having to start all over again when I make a real mess of my typing.

All the above features of the earlier version are in the same place, but now when entering the menu, another section of provision loads from disk. Adopting this approach means that there is almost twice as much room for text, over 20,000 characters. If a really long document is called for, comprising several full text files,

you can command Tarword to read them out of a user file, and print them as a single document with no further commands.

Perhaps the most impressive feature is the data-enter facility. You first create a file of names and addresses, including each post with a code, up to the maximum of ten. You then type one letter, to be seen as your name, and Tarword will print all of them with the appropriate names and addresses in the correct places, a sentence moving on next. The system's "memory" is so well designed, that you can specify conditions which would lead to letters only being passed to certain customers, and lines of customized text if you want them. Any number of different standard letters can be used this way, and by including other details in your name and address list, you could choose to write to particular areas or customers who bought certain products. You can even print out the address labels for the envelopes.

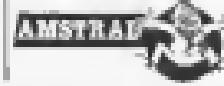
The whole thing is explained very clearly in the manual, with excellent self-teaching tutorials, and an extensive help page. Users with two drives are also catered for, and the program will interface with Masterfile and through compatible software for more complex use.

A comprehensive and user friendly package for both home and professional use at a price which makes it very competitive to existing systems. Highly recommended.

Price: £24.95

Publisher: Tarman Software

Address: Springfield Hse, Hyde Terrace, Luton LU3 8LH



Superexplorer

Superpower is far from the serious packed word game suggested by the brief page of the cassette copy. It is a slow moving board game for two players. The game, a sort of 20th century chess, involves great skill and strategy. However, the two players have to be human, there is no option for the single player to play the computer.

Few instructions appear on the cassette tapes, apart from the fact that LOAD --- CODE is the command required to load the program. Despite the load from command, the game appears to be written entirely in BASIC.

Several pages of instructions are available on the screen once the program has loaded. Fortunately, these are available at any stage through a help option, or the game is quite complex for beginners.

The game itself occupies a board containing plain squares. Each square represents one country. Each country starts with an equal number of armoured, money, people, women, oil, and each player receives an equal number in resources. The players take it in turns to make decisions over the allocation of resources and the influence within the countries under their control.

The aim is to invade and take over countries occupied by your opponent. The winner is the one who takes over the entire world. You can take quite some time, so a save game option is available.

This is a novel board game for those who like the kind of thing, but poor graphics, and no one player option would limit its appeal.

D.M.
Price: £24.95

Publisher: Howard Martens

Address: PO Box 11, Fakenham, Norfolk





Grand National

The annual races at Aintree form the basis of a computer game.

The small print on the cassette cover fails to be read very carefully so apparently all the race passes, which it doesn't. It does contain a lot of the details of horse racing.

The first part involves you, as a jockey, racing a selection of horses to run in the National from horses named at race cards. You also have the chance to bet — you start with £5000 — on your horses, and on others you fancy. You make your choices through a simplified form menu, a knowledge of the conditions, and the style of the horse.

Despite the realism of the game, racing is restricted to "on the nose" bets, but 10% betting can be deducted from the bettor's pot.

Once you select your horse, the race starts automatically, the race itself. This is meant to be of average standard. You have control of your horse, moving it left or right, using the shift, and deciding when to jump lanes. Graphics are excellent, movement is very slow, and the article indicates how fast it seems during this piece of writing.

On the review copy, the horse failed to respond to the right keypress, or fell at the first fence on every try! The reviewer makes the pertinent assumption that with a basic computer it can't be possible, on copies available for sale. But, overall, players will need to be horse race enthusiasts to gain much pleasure from this game. D.J.W.

Price £9.95

Publisher Blue Systems

Address: 53 Bradford St.,
Walsall



GRRR

AMSTRAD

GRRR

GRRR

GRRR

GRRR

Killer Gorilla/ Gorified

Two games for £1 more than the price of Amstrad's usual offerings — and certainly up to the standard of many of them — Micropower presents its versions of *Monkey Kong* and *Defender*.

Killer Gorilla has your basic man trying to ascend platforms and ladders in an attempt to rescue the monkeys in his care, collecting key handles etc as you go in the line of barrels and obstacles from above. You have the power to jump over and also use a hand hammer for problems that persist. If you succeed on the floor sections, you're given the beginning but with added problems: 10-second time limit, added effects and a little more. You are given the opportunity to prevent the 3-D graphics of the original.

Gorified has your man going about a similar free-flow landscape littered with obstacles which are the targets for various types of monkeys. Using other powerups or by yourself you must try to stop the invaders and preserve your plane to that go for you. If you can cap a ladder, carrying a monkey and return to the ground, more power points. As one wave is defeated, another comes. Faster now takes no place, while at the top of the screen, a number shows what's coming up. Really fast and frantic, and difficult to get a high score without practice. Gorified's graphics could only be described as adequate.

Acceptable renditions of good games, accompanied by nicely detailed instructions, though by no means one of the best.

Price £9.95

Publisher Micro Power

Address: Sheepscot Hse, Sheepscot St South, Leeds LS7 1AD



Digger Barrier

I thought this might be about Diggers, but it isn't. The video games give an involved online adventure, featuring Dugout, extremely strong characters, at a local factory. This involves climbing ladders, digging holes for the creatures to fall into, then burrowing them. If they catch you then you lose a life, and if you happen to fall off a ladder, then you are either stranded, and have to be dragged to your base again. Playing a similar way, this is a very conventional ladder, tools and digging game, and the concept has been ruined for me.

The very basic of actions tell you the game is leading, and when it's finished the last table is revealed, though no demo mode is available. When the game starts, there are some good sound effects, though not many. Originally, the game is well-received by the year's standards. Digger barrier is a nicely drawn blocky-style 3D-style coloured game, and when it's up to a level of control with a Dugout, the game completes with lots around the screen in comparison to the graphics displayed in *Sectory*, which must now be the Amstrad standard, they are unapproachable. There are only four different screens.

The game is certainly a challenge however. Dugout is a patchy, if a very difficult to master game.

Overall, something like the standard of the best cheaper games for the Spectrum. If you want have a ladders, tools and digging game, you'll enjoy this. But don't expect the earth.

D.M.



Flipped



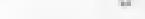
Hocked



Kiosk



Yawning



Cometose

Time Truckers
TIME TRUCKERS
Ages 8-14

By the author of *POOD*

Time Truckers

This is a game which allows children to travel the 12-hour clock previously indicated on the large cassette box in a manual which provides detailed notes on loading and instructions on how to play the three distinct *Traveller, Truckers, Traveller and Super Truckers* games.

The manual was brief but particularly well laid out giving instructions for further activities.

As the player, or the computer option, you are an analogue clock which operates in speeded-up time and allows an eight-hour work period. Your job is to move the truck around a network of roads collecting fruit and vegetables. These need to be deposited in the depot to collect the money. Not quite as easy as you only have a partial view of the roads.

The learning curve comes when you have to log your time whenever you come across a road to load. This is done on a digital clock which my sample of children — eight to 11-year-olds — had a problem with initially. Most young children

will be used to moving the other half they soon learned. And that, I suppose, is the object of the game.

The more complicated options have opening times for the farms, which provide directions for working road routes which cause you problems, hence adventure planning is essential.

There is a high score table and the choice of a female and male trucker means there is no problem about sexual bias. Full marks for a well thought out game that should achieve its educational purpose and keep them interested in short bursts. M.P.

Price £9.95

Publisher: Applied Systems Knowledge

Address: 44 Upper Richmond Rd, London SW3

BBFC



Talisman
Talisman
GAMES WORKSHOP
Talisman

The game starts with an illustrated list of 12 characters, such as the Prince or Warrior, each with different strengths and costs values. If it's a new game owner "yes" to "Do you want to be new players?" and you'll be asked how many characters. Each choice of character leads to choosing it, choosing computer or user, control before proceeding to the next and finally speed of play — fast, hard, moderate or speedy.

Now you move character left or right and occasionally you'll need to collect a location, e.g. north or west. Between the houses and the villages, roads and ordinary, there are short little sections that have character points, icons of strength, craft, love, gold and spells — when present.

As long as you move right has the cards of time running out as the game proceeds and the longest section shows details of ordinary objects and any followers. Stop or pick up the objects and a detailed description of events will appear.

A monster may attack — its strength or craft values will be shown — and you can run or fight to pass the object and monster. Fighting the key adds a damage value between one and six, so both sides and the one with the greatest total value wins. When the roads run out you'll stay at that location.

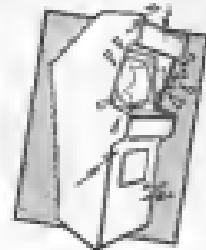
Any of the 14 goals required may be used in your adventure and seven ordinary objects, eight magical objects and eight followers to help attack the locations. T.W.

Price £7.95

Publisher: Games Workshop

Address: 27/29 Buntingford Road, London

SPIKEFIELD



Greg's Revenge

I was sent a private copy of this game, without any instructions, so the scenario using this was "normal loading", which is not even accurate as, like all the US Gold games I've seen, it uses a fast-load system. Working out how to play it was quite a challenge, and I suspect many have failed to discover some of the features.

You have control of what appears to be a knight-in-arm, riding a steed up the side of a mountain. He normally goes quite slowly, but speeds up if you hold the joystick the button down. There are short supply lines on the mountain path, and riding over these causes power. There are also a few lakes and buildings, and failing to dodge these loses you a few live lives.

Very often you pass the mouth of a cave, the vine made of a straight stretching out of its power, and a number of small bats, fragile creatures, fly over, striking down a 1% of the life total but the power of the straight you craft and lose a life, for reasons I could not even guess at.

There is a tall bush blocking the path at one point, with a bridge, broken at, and occasionally a strange creature which I presume is a goblin. I suspect that is why most of the other characters are dead.

The graphics are excellent, and the game was quite enjoyable, despite the pricing dimension.

Price £9.95

Publisher: US Gold

Address: Unit 10, The Parkway, Ind Caves, Hengoed, Mid-Glamorgan CF8 4LY

004





Chess

Enter the computer market to another game at £1 give up watching TV, as two robots playing this game cannot really do any damage.

For games players preferring to not 'break' and just tap away, this is ideal. It doesn't contain any fury, lurking insects of insects needing slaying, but the game of instant control does become addictive if you have human opponents — particularly since this one, playing from five to 10 moves.

Combat between the agents takes place in an arena, with each computer rating some selected and can split and never connected. **CREATURES** The winner — the Level of Computer — in the last material above, though there's a loss in the number of game turns in which to achieve victory.

Screen one of four options of two to make words and up to eight levels, while the next seven sets for character's name to be entered, whether computer controlled and which of eight illustrated characters

and which colour. This is repeated for each player and the game starts with a menu offering options: split-screen, selecting spells, examine board and compare with game.

Each protagonist, or pawn, takes a spell — which can produce an instant alarm — then moves in and their character around the arena using Q, W, E, R, C, A, Z and A. If the opponent is a human or in range you're destroyed — or not, it's your turn.

With many players, you are a poketful of green full of vital ingredients, hoof-crumping monsters.

Try something different for a change — you'll enjoy Chaos. I'm sure. T.W.

Price: £1.10

Publisher: Games Workshop

Address: 25/28 Sackville Road, London

SPECTRUM



Cavalier

This is a remake of the arcade by Bally/Midway and it can be just as good as the original. The game is of the hidden type and you play the part of a young knight. The objective is to collect all the pieces of the door, each time you walk over one is added to the pieces in a small window on the right of the screen.

Once all the pieces have been collected the knight can then pass through it to the next screen.

Also available are various model kit items that you complete. Opposing you in this quest is the wizard and his various henchmen. The wizard plays up all over the screen and various demons who then wait around the screen attempting to bump you off. What happens if there touch you or if they fire one of the power-ups at you?

If you play along long enough you get a chance to catch Escalibur, which then assists the screen. Once caught the sword gives you infinite power, enough to power wings and fly everywhere!

The graphics are very clear and smooth-moving but control is the least a rather difficult. Based in a collection of jolly towers that play during the game and change at different times happen, such as passing a piece of the door or getting Escalibur.

All in all I found Escalibur very enjoyable — but then I liked the arcade version as well. J.D.

Price: £7.99

Publisher: JAMsoft

Address: The Workshop, 23 Church St, Birmingham, B5 2WY

C64



Karma

Address: 1000 London Road, Peterborough, PE1 7WY



Artwork

The sort of results which can be achieved using this software can be seen from the accompanying screenshots drawn by one of the co-authors. Via a series of well thought-out menus, you can select screen mode, ink and paper colours, and draw using the four basic controls.

A moving cursor is steered using the cursor keys, though resources are available to draw lines, circles, boxes and ellipses instead. Not only this, but the movement changes can be measured around the screen, and an ink colour changed. Text can be included and this too can be changed about as one pleases. The most clever of all is a **FILL** command, which is really neat!

In use, the whole thing is really user-proof, with the opportunity to undo what you just did, and certain areas to help you. You can make your own simple masks, use to draw available, or to tape, and the screen can be broken into own programs. The only 16 Fellow provided also contains details of how to use part screens and zoom, these again have tools in BASIC and machine code. The whole package is characterised by user friendliness and ease of use.

In order to reproduce your power to your own programs and not the old inferior ones used prior before buying the package, however. An additional software would have been useful to share certain formats, as would a cross-over disk. Recommended, if a little expensive. D.J.M.

Price: £9.95

Publisher: Karma

Address: 1000 London Road, Peterborough, PE1 7WY

AMSTRAD





Bored of the Rings

Tongue in cheek, in the Bored of the Rings? Someone had the right to Lord of the Rings to Delta-40's produced a full-scale comedy — or parody — game based on the取景地 in Western Middle Earth and the Shire, the home of the dangerous little Hobbits.

For the Frogs, we're Baggus, a baldie, fat, cowardly Baggus — a real hero! Frodo has a booby trap laid on the field in a grove and so can't get out, where his Uncle and Cousin are looking for a "stealth侵襲" to save the ring and destroy the black land of Dolmen.

Screen top shows descriptions of locations and what is happening to predefined characters, with "What would Frodo do?" below that. Using 40 words in simple sentences, you direct Frodo on his mission in the two game which is in three parts with passwords given at the end of each part in Bored of the Rings. Written using Gilbert's Quill and Illustrate, the jokes are like those found in college year books, with Frodo being a Prohibitionist, travelling to the town of Wines, running the Welly mountains and hiding from a home and ruler who wants him to Frodo do that or to make everyone explode.

Suspense — just like — is a computer response containing word jokes, reviews on answers, an on going story, traps, alerts, complications, and references to famous — who are Frodo, Stephen Sondheim and Catherine孰知? (author is reviewed, please see T.W.)

Price: £1.95

Publisher: Game Workshop Ltd

Address: 27/29 Sambourne Rd, London.



Functions

This is a role-playing adventure featuring over 2000 locations and 10000 objects — a programming language that contains real-time action, full text responses, multiple command types, dozen of independent characters and 1000 different views.

You control Marvel the Warmer, Elshar the Elf and Greywulf the Wizard as a search for the map of Return to Lothlorien, the stories of Barad-dûr, the history of the ancient empires of Sauron, or the actions of the Orcs and other foul denizens of the Northern Wastes, or the destruction of the festival. Besides the Dark — as nearly anyone the computer and over 40 inhabitants. As you travel you'll meet allies — some not as friendly as they seem. Events will continue to happen whether you like anything or not — so the forces of Middle-earth will just continue to distract over often.

Screen top shows a panoramic view of that location usually dimmed and with a sword at either end, with below a description of the scene complete with characters present or related characters, while at screen bottom is placed your orientation.

At any time you can change from character to character, one of which can die though they may be forced to work in to be taken helpless. Using 10 will cause you to lose. Eventually, you must key "W.E." in order to move on. When attacking a building, trying to pass you need, and "C" combat.

A well designed game that will appeal to those who like keen adventures. T.W.

Price: £7.95

Publisher: Game Workshop Ltd

Address: 27/29 Sambourne Rd, London.



Sprite Editor

It has a piece of software for ZX Spectrum owners, though a joystick or keyboard controlled version also features on the other side of the tape. The powerful editing enables as many as 64 sprites to be designed and saved to tape for use later. Coupled with the set of six built-in tools, this program makes the art of designing sprites a pleasure rather than a chore.

After the sprites have been designed on the grid, you are able to call them up in memory for further processing and they may be moved from one storage area to another for this purpose. Reversed, or "negative" images also be created automatically, even a mirror image can be made but unfortunately the program does not offer the 90-degree rotation.

The powerful option allows you to make several spaces for animation, while trying to create effects such as a figure walking, running, or jumping. To do this the sprites are displayed consecutively at the same point on the screen and the changing display can be moved around to check the total effect.

Once saved, the sprites can be reloaded into the program for further development as a later disc, or loaded into your own programs with clear instructions being given on how this may be done.

The Spectrum today has a built-in calendar at the start of the program which shows on a weekly level. The calendar is used against the day and trap pad to indicate the correct synchronisation with the program. The pen can then be used to scroll to select the mode or to file the sprites on the design grid.

R.D.

Sprite Editor

Publisher: Game Workshop Ltd

Address: P.O. Box 56, Luton LU3 2IP



Night World

I have no idea that I don't really like the game at all. It isn't that it doesn't play very well nor that it is badly made. It just seems so pointless.

There's nothing difficult in it, it's a simple game with a simple and basic concept. The aim is to find a path from chamber to chamber by running and jumping from block to block. As such I suppose that there is an audience for such games but I tend to feel that they are much of a waste.

What makes this game different is that you actually control a human cyborg who changes from one form to another when right into it and vice versa. Unfortunately that is all that changes. The game just goes harder and harder.

There are the usual necessary moves to make it harder but there don't tell you they simply drain your energy. This means that you can only continue and it is no good advantage.

The controls are rather difficult. There are times when Lee Lister, your partner, seems to be trying to end up without any possible means of support and others where the path is blocked for no good reason. Another couple of reasons are that the switch option doesn't appear to work and that the invincibility and color has been helpful. As I said earlier, a playable game but rather pointless. R.D.

Night World

Publisher: Atlantic

Address: 1 Orange St, Sheffield S1 4DW



Microcosm

This is another in Perfect's range of budget games, a three screen game. The movement of the ball is actually an interesting sequence with a number of phases special being transferred to a new policy.

The problems are resold. Firstly, the maintenance billers have been damaged and your job is to transport new supplies of ledger to the required post box. Secondly, there are a number of rather odd looking robots, robots standing about trying to give you the kiss of death.

The game is without a doubt a bit strange and your controls are strange, slow, and like. The graphics are good, certainly as good as most full price titles, and the movement routines are very smooth indeed.

I had very little difficulty controlling the characters although a joystick option might have been a real advantage.

I have recommended the ledger a little. There are also lots of odd creatures running down your path. You move about and on low levels a number of very nasty looking spiders and beetles. A final difficulty is the plan's need for refreshment.

Whenever the plan is running low on Pitcon Stock up to the bakery (book) you have to drop your power pack and pick up the missing can. You then move around shooting the plan with the food that they desperately require.

The difference between the ledger game and many full price ones is no better than this has to be great value for money.

B.S.

Priox C2 50

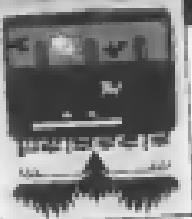
Publisher: Perfect

Address: Wellington Hse,
Upper St Martin's Lane,
London WC2H 9EE.

BBC



DON'T BUY THIS



Don't Buy This

Very seldom do I review a game that I truly think is excellent and would gladly recommend for purchase.

Don't Buy This is not one of these games. In fact it's not even of those games that's it's a complete waste.

The title of the programme game is Race Am. A rather unusual choice that is. In Poly Position what a Schizo! It is in a 3D style and contains mainly of block graphic cars crashing around a tight implied track.

The second, previous, version is Poly. Poly is the sort of program which would undoubtedly damage your computer if you used it. You must prevent various flying bolts at the poly. Poly achieves this by hiding them with his tail. For an apparent reason, he is being attacked by few, few bolts which he can duck by standing up.

The third, distinctly derivative, is Wood. Wood is the furthest in style to be had in the very definition stage and if you manage to find the keys to the source would be to immediately unplug the computer and with walls about.

The fourth, perhaps program is Poly 2, the long awaited sequel to Poly, and no completely devoid of my previous disclaimer in it, that he was going to complete it as further.

The last, bizarre, thing is from Maxine which appears to be a simulation of the inside of a pig's rectum, it certainly has as much interest as one.

So to sum up that is the worst waste of a good tape. I have even had the misfortune to review, a new Doco award, it has been specially created for this and it really deserves it — DEAD.

K.G.B.

Priox C2 50

Publisher: Perfect

Address: Wellington Hse,
Upper St Martin's Lane,
London WC2H 9EE.

SPECTRUM



DON'T PAY



Don't Panic

It's tragic that one of the most enjoyable games that can be made should be written for the BBC Spectrum, but to prevent that you don't need typos or errors or waste of the am I option to produce a good tape — just a good one.

You control a 'Wood' who must find a spot to hide and quickly unplug and the floor levels of a large bay. The levels are connected by lifts, and separated by other levels. The bay is several rooms with action, and, possibly, smoothly as the 'Wood' moves across the screen. This might sound like just another platformer, but the object game, but it has a couple of real twists. First, the computer is clearly and deviously, and then more or less quickly, unplug the tape. Also, there is a credits, game version of the program from Alan Turking in the tape bay. That then moves faster than your 'Wood', and you can either find yourself face to face with him and having to instantly run to the nearest lift, wondering whether or not you will make it.

In BBC it has to be a simple game, but it's not too enjoyable because of that. The graphics are coloured and have character, and trying to avoid the alien while manoeuvring the maze like plan contains strategy and avoids traps in a way that may seem complicated, and expensive, power fail to do, even with as much BBC as memory.

K.J.

Priox C2 50

Publisher: Perfect

Address: Wellington Hse,
Upper St Martin's Lane,
London WC2H 9EE.

SPECTRUM



Ledger Program

Recently I have had reason to acquaint myself with the murky — and deadly boring — world of accountancy, so when I received a ledger utility to review I thought I might be able to practice some of my newly acquired expertise and bring something into the bargain. Also, I have to admit failure.

This utility is more definitely for those who are already well-versed with accountancy as a necessity. The documentation can't be expected to teach the uninitiated, but even with my small advantage I found the whole thing, honest, painless. Despite many local bugs, it has always seemed to me to work in an artificial environment, and the method I used to test it by over successive runs immediately paid off by comparison.

While it is obviously a useful utility in the right hands, it is easier to see where it might appeal. The requirement of a disc system and power cords as in most financial software and I suspect that owners of such systems would very probably find great assistance. The program, when supplied on cassette, is intended to be performed by you and then SAVEd to disk, for which purpose it is supplied unprotect.

Full details are supplied with the documentation, together with a typical warning about the effects of deleting QUIT, which the program does to prevent accidental use of EXIT=, and the removal of read/write, TI Operation System, which shows in the mode of the computer.

Bearing in mind the subjective nature of such a review it's not much use to us. Other users might judge it differently.

P.B.

Priox C2 50

Publisher: Perfect

Address: 10 Abingdon Rd,
Stockport, Cheshire SK1 5AH

T199



S

K

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B

B

Sanding and Control Projects for the BBC

Most BBC owners will use their machine for games and, except for plugging in joysticks, are reluctant to play with all the strange-looking pins and plugs at the rear and underside, so to date, no more informative writings on these machines, as far as I can tell, that the general enjoyment and sense of achievement can be attained. It is when you find that the computer starts to demonstrate its real power and purpose...

All projects in the book use the BBC's language, the graphical interface of the past, and the author assumes the reader has no previous knowledge of electronics or of the commands needed to control the two ports. Each stage in the projects is explained as simply, easily understood steps, using very clear drawings and text.

None of the projects require any sophisticated equipment and all the components can be bought at cost the less than £25. None of the projects use the computer as a power source but the switching projects using the user port require a battery or small power supply.

All the projects circuits are built up on breadboards, or use a simple home-made version, so only two computer connectors are needed and components can be re-used or easily changed.

Projects range from remote light switches, using light dependent resistors, to the control of modelled vehicles. All projects are fully explained and component lists, with supplier, are given at the back of the book.

Price: £3.95

Publisher: Macmillan Books

Address: 440 Millbrook Rd, Southampton SO1 1RQ.

BBC



The Computer Dictionary

One of the major hurdles facing any newcomer to computing is jargon. To the passer in the street a conversation between two computer buffs might as well be in a foreign language. The Computer Dictionary by Ian Wright looks down the barrel at an informative and light-hearted manner.

To produce a computer dictionary which will tell us sufficient numbers to make it possible to use a specific computer task, it is one that had never considered such a purchase. If Ian Wright has got it in a format which has managed to remove what could have been a very heavy going textbook into a very informative, and concise handbook.

Not wanting to give the encyclopedic status of the book, I must stress that all words do actually have some explanation. One example of this, included by Ian Wright will prove interesting for those among you who are interested in computer portability. The word GOTO is defined thus: "the instruction GOTO results in a sudden leap from one part of the program to another. This is like travelling in hypersonics, in that you instantaneously pass to another without being anywhere in between. If you have ever wondered why GOTO is supposed to be incompatible with structured programming, just draw a flowchart of a program based on hypersonic routes."

The handbook not a literally worded with equally funny cartoon drawings by HILLY's cartoonist, Alan Barker.

Not to be missed. This could be the first dictionary I will read from cover to cover.

Price: £3.95

Publisher: A & C Black

Author: Ian Wright



The Working Amstrad

This is the latest of David Livermore's "Working" series. Together with Simon Lane, he now turns his attention to the CPC 664 applying the same teaching philosophy used in the series of application programs that started with the first in a highly structured form, and all the particular features of the machine, explain in great detail and, only now, the program itself, but also how the user can patch it for use as his own program. It's a good formula through which you can learn a new skill, and therefore with a range of excellent applications to boot.

Applications covered are various game programs using graphics and sounds, graphics with graphics, pinball and 3D graphics in colour, character set definition, a bit map graphic page display, and a real part colouring. In a more serious vein, the built-in drives are discussed as a user definable disk-based filing system — the ubiquitous Utility —, a simple text editor for word processing, a ten question generator, and banking and accounts packages. If you have the patience and time to type them in, it's a great value for money.

Perhaps the most impressive chapter is the method of data restoration. Everything is split up into modules, there's lots of it, and no one module is ever used, and every module has a line or two of commentary which really does explain clearly. It isn't always like falling off a log, but with a little dedication you will certainly pick up a lot of information and some good programming practice.

BUSL

Price: £3.95

Publisher: Southern Books

Address: 12-12 Little Newport St, London WC2H 7PP





Computer's II Collection, Volume 1

Computer's II Collection, Volume 1 is an Amstrad magazine for computer buffs. This book is a compilation of some of the articles that originally appeared in the magazine, adapted where necessary, specifically for the TI-99/4A. The articles are organised into seven chapters covering characters, features, application, registers, sound and graphics, utilities and errors.

I think the book will interest all of us who are the beginner who already has some programming knowledge, but want to explore more fully the features of the TI. However, the experienced user without an in-depth use of an expanded memory should also find the book worth buying.

Each article is self-contained with names and/or programs where appropriate. Every topic is introduced in detail and complemented by a program listing, screen and some variable column. I found **Financial** interests particularly interesting as it begins by discussing differences between loans and mortgages, and goes forward and on into savings, savings, annuities and payments. Other applications include electronic spreadsheets and word processor programs, and strategies for investment.

If you are more interested in games, there are lots of those included plus an article on writing your own. This provides valuable advice on what you considerations should be taken into account when using TI-BASIC as opposed to Extended BASIC, and how to speed up running of the programs on the standard processor.

Overall, a particularly interesting collection of ideas, but really only worth the money if you have Extended BASIC — at the very least.

J.M.

Price £20.95

Publisher: Computer Publications Ltd, Holm Studios

Address: 15 St Anns Rd, Bexleyheath, Kent DA6 7BW



1001 Things to do with your Commodore 64

The good excuse many of us give for buying a computer is that it will have lots of uses other than playing games. The trouble is, you never can be sure when you'll need it. This book solves this problem since it is dedicated to giving ideas for putting your 64 to work. While storage is great, it doesn't try to teach you anything about programming.

Even to someone like myself who has used computers for several years in different roles, the variety of ideas is quite amazing. There is something for everyone ranging from games through to reasons for calculating how much will paper you need.

I won't attempt to describe the book in detail but the main chapter headings are business and financial applications, maths and statistics, general applications, diskware and specific, education, hobbies, games and peripherals, artificial intelligence and utilities. The most valuable aspect of the book is the references given for each application as discussed earlier than just a listing. The amount of depth of information reflects well on the authors — they aren't just dabblers. Furthermore, over 1000 tips, and chapters give some ideas for original applications. For instance, there is a brief section giving details of a large number of networks in the states.

This is an excellent book which is not only a source of useful programs but is also a good read and an education in itself. As the price, good value and of the high to the computer owner and the prospective owner.

M.W.

Price £19.95

Publisher: T&G Books

Address: Blue Rose Samson, PR 1214 UK



Computer's Third Book of VIC

Most of us enlightened owners of C64 or Amstrad owners will have come across the excellent magazine **Computer** to date of its excellent price, there simply isn't anything in this country to compare with it. This book is the third compilation of VIC articles previously published in **COMPUTER**!

The book covers an array of applications, utilities, games, graphics, sound and useful utilities. The greatest section is probably the utilities for the sum of £10 per item top quality. The most obvious feature in the greatest high numbered section is, for example, a listing for a machine code word processor which has an absolutely high specification. This item is as good as worth the cost of the book.

Other notable items are a range of machine code tools (OLD, REMEMBER, FIND and CHANGE), memory driven sound, reading lists and last, some. Most of you will know the problems of finding tips in books to help with this problem two aids are supplied by the book, namely a pocket reader and a machine code reader.

All listings can be entered with either col. and hex or col. then either hex or decimal, there's also price. Overall, the book is good and there's something for use of all abilities and interests.

Commodore may have for power VIC owners, but this book demonstrates that there are people who want to support the VIC and supply good quality material. At the price, this book is great value for money.

M.W.

Price £19.95

Publisher: Holm Studios

Address: 15 St Anns Rd, Bexleyheath, Kent DA6 7BW



Flipped



Hooked



Keen



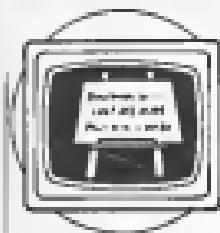
Tweaking



Commodore



EDUCATION



**John Henderson
takes
a close look at
Summerfield
software**

Summerfield Software is one of the newest players in the field of software development, yet in many ways it is unique. Unique, because Summerfield is an independent school for children with impaired hearing. Founded in 1952, it exists for children from nursery age up to CSEAO level. Clearly the staff show a caring attitude, spending a great deal of time assisting their pupils. They also adapt their own learning resources, which is where the computer comes into the story.

The school computer centre has five computers in operation, with another two on the way. It was staff's idea to produce their own software and looking

through the package, there seems to be reasonable enough Summerfield provides software that is "as good as most that is available and a lot better than some". A generous amount has been made to fulfil the aim for

The same amount of two programs, available separately or on one disc at an all-in price of £29 — gives a price for a single disc. This is quite reasonable for the accompanying features of the package.

Actions from Paris is an adventure game with a difference, but let me keep the secret for a while longer. You follow the trail of any 100 £1-billion of Bond — in other words to get the secret documents back from Paris to HQ. Your choice of transport is limited to both time and money dependent during the journey. Much thinking takes a long time, but it's cheap.

The program is meant to involve children in decision making, but the early begin-ners will test their skills to the limit. At any one point you

FARM IS A VERY INTERESTING PLACE TO VISIT. IT IS HOME FOR ALL KINDS OF ANIMALS. CHICKENS, HORSES, A FARMER WORK VERY HARD WE EAT.

$$3 + 4$$

$$\frac{7}{}$$



can be charged as well — to the cost, if you are given a discount on which is based and time is money, etc., on what every good, educated boy would do. From the break, say, and will until the last exam passes or from sample, isn't it?

The whole structure of the program is disappointing, and the number of spelling mistakes in an educational program is horrendous.

The sound levels are bad, perhaps they need to be in Summerfield but all users are not bad at hearing. Even the graphics are poor — if you manage to get back to HQ you may be decorated for poor service, or you may be sent to a living room for bringing home the wrong papers. A less drastic punishment would do to open "who nearly made it" to make up the poor of honorable never cleaner. All that effort down the drain?

Thomas Hunt is nothing to do with telephones and blood, tomato, coagulase, remains, but "Find the missing object" and Match 3 programs are used throughout and the program is dull and uninteresting. Too many symbols on a small area, together with the choices of colors combine to make this a real pain.

Four discs as to where to go next reinforce the lack of incentive to explore. Further although symbols are explained in the introductory sequence, there are no help facilities and no copy of the map.

The idea is to find two keys and some treasure, but the longer it takes you to find them

the less valuable the keys become. The program is designed to accept only four main references or symbols, plus references, however, it will allow the input of letters or more than six numbers at any one time. An error message is all the help they gets are given.

Many other areas are not covered at all, so certain keyboard skills can't be on the program easily. The starting point for the absentminded is somewhere near the Public House — perhaps the best plan would be to stay there.

Task Doctor is a program designed to encourage logical thought and critical thinking in the art of early programming. Schools familiar with the MicroMaster package that came with every computer will remember the program Crash.

This is a typical of the same program and differs from the same managers in its independence. The background colour makes the screen very difficult to read and the menu is poorly defined.

Only three keys are required to make interactions into the program, yet it is possible to ones who know from the keyboard. The idea is to think ahead and move the rock through the minefield without hitting a mine on the way. To achieve this children have to plan the number of squares they have to move forward and how many turns are required. Computer, though, often forgets.

A successful run results in a horrifying sort of "Computer Crash", designed to send you back to base. Better to lose than to give this award. When re-start, the program is a classical example of early school software that now belongs to the dustbin.

Logistics of Lines is the final program and allows the drawing of algebraic equations from unknown variables. Users have to input values for X and Y to see the resulting pattern. It is a learned and depends on how individuals see the way marks should be taught.

Whilst the principles may be

fine, why not the powerful menu or such a learning way. Again, there has not been sufficient user support in teaching CAPS LOCK off seems to show the whole program.

There are some valuable lessons to be learned. Good teaching teachers will take an interest in all modern developments to assist children in learning. This does not mean, however, that they are best qualified to write computer programs for children. This is a skilled job requiring a good deal of time.

Yes, Summerfield Software is as good as most educational software on the market — but this just proves how poor and dangerously dangerous it is for children. I applied Summerfield's policy on copying, protection keys, yet a belief that users will not abuse the rights of the author. I also believe that after so help any user facing problems with a program. What greater fee undertaken in the '80s you can't

beat 'em, join 'em' attitude.

The price — £15 — for programs of this standard is extremely expensive. There are many spelling mistakes in both documentation and programs that a caring attitude has not been shown towards other computer users. Schools and parents should not be fooled by large ads on imagination and try software without trying it first, even if it has been trusted in a school.

Please Return from Paris —

111 03

Transport Point — 014

Task Doctor — £11.25

Logistics — £3

All four on one disc — £5

Petition Summerfield

Address Summerfield School,
161 Worcester Rd, Moseley,
Birmingham B31 4ET

BBC



ROMANTIC ROBOT present

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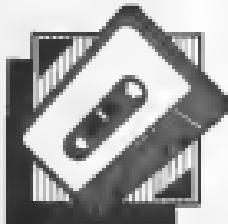
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BULLSEYE



Here's an old favourite for Amstrad users — a darts program from Stephen Anderson

If you like playing chess then the program will give you the chance to get in some practice. You play against a friend or against the computer and the rules are the same as in the original game.

A short bracket is shown on the screen and two pointers appear — one in the top and one at the left-hand side of the screen. These can be moved around using the cursor keys or joystick and should be placed well apart.

The scoreboard tells you which player has thrown, the total for the current throw and overall total.



Added

Environ Biol Fish (2007) 79:103–110

81 player 1 score
82 player 2 score
83 computer player
84 the computer's
85 player 3 score
86 score of player
87 the best from last

ANSWER

10.179 - *var* *varname*
10.180 - *proc* *procedurename*
10.181-11.181 *variables*
11.182-11.183 *make* *variable* *value*
11.184-11.185 *max* *local*
11.186-11.187 *change* *variablename*
11.188-11.189 *local* *local*
11.190-11.191 *reference* *local* *local*

```
180 *****  
181 *COURTS BY E. LINDNER  
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WELCOME TO BASIC

Brian Jones
explains arrays and
shows you how
best to use them

How did you get on with the program I left you to write last time? There are possible solutions.

The fun was to produce a sum of five random integers between 0 and 9 and check your answer against the correct answer.

The 10 multiplication sums where you select the larger number to be added could be:

Now one of the most useful facilities in BASIC is the way it takes over program before you get to input with a line such as

These will be called *one-dimensional* arrays, and naturally have one unique dimension — and this at a very similar individual value within the array, as elements of the array are called them, are specified by their numerical position on the left or right. This is achieved by giving the array name, where each index has the same rules as ordinary variable names. Followed by the position in brackets. So $AB[1]$ is the value in position 1 of an array called *A*. $AB[3]$ is the 3rd element in an array called *AB* and $CD[3,5]$ is the element in the 3rd row and 5th column of a 3x5 matrix array called *C*. The last example is called *two-dimensional* arrays, the others are one-dimensional. They can have more than two dimensions, but these

about now?
Why are they so useful? Look
at this.



Finally, the *new* machine has 30. This defines an array called **WT**. It is *dimensioned* and *re-size* equal. The value goes to 1 to less than 20. How bad is it to *re-size* an *array*, overwriting the position in the list, *re-size*, the *length* of the *array*. **WT**, can be added to the *sum* of *whatever* *computer* *language* *languishes*.

Without the *array* we'd probably have *different* *named* *variables* for each *computer*'s *space*: **SL1**, **SL2**, **SL3**, *perhaps*. Then we'd need a *long* *list* of **IF** **SL1 = 1**: **THEN** **SL1 = SL1 + WT1**, **IF** **SL1 = 2**: **THEN** **SL2 = SL2 + WT2**, and so on. With the *array*, one *assignment*, *dimension* and all **IF**'s are off the *code*. Here's another example of an *array* to *code*:

```
10 PRINT"WHAT'S YOUR BIRTHDAY?
11 PRINT"ENTER IT AS DD/MM/YY
12 INPUT A$1
13 PRINT"WHAT'S YOUR AGE?
14 INPUT A$2
15 PRINT"WHAT'S YOUR GENDER?
16 INPUT A$3
17 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
18 INPUT A$4
19 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
20 INPUT A$5
21 PRINT"WHAT'S YOUR FAVOURITE SONG?
22 INPUT A$6
23 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
24 INPUT A$7
25 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
26 INPUT A$8
27 PRINT"WHAT'S YOUR FAVOURITE FILM?
28 INPUT A$9
29 PRINT"WHAT'S YOUR FAVOURITE BOOK?
30 INPUT A$10
31 PRINT"WHAT'S YOUR FAVOURITE PERSON?
32 INPUT A$11
33 PRINT"WHAT'S YOUR FAVOURITE PLACE?
34 INPUT A$12
35 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
36 INPUT A$13
37 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
38 INPUT A$14
39 PRINT"WHAT'S YOUR FAVOURITE SONG?
40 INPUT A$15
41 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
42 INPUT A$16
43 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
44 INPUT A$17
45 PRINT"WHAT'S YOUR FAVOURITE FILM?
46 INPUT A$18
47 PRINT"WHAT'S YOUR FAVOURITE BOOK?
48 INPUT A$19
49 PRINT"WHAT'S YOUR FAVOURITE PERSON?
50 INPUT A$20
51 PRINT"WHAT'S YOUR FAVOURITE PLACE?
52 INPUT A$21
53 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
54 INPUT A$22
55 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
56 INPUT A$23
57 PRINT"WHAT'S YOUR FAVOURITE SONG?
58 INPUT A$24
59 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
60 INPUT A$25
61 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
62 INPUT A$26
63 PRINT"WHAT'S YOUR FAVOURITE FILM?
64 INPUT A$27
65 PRINT"WHAT'S YOUR FAVOURITE BOOK?
66 INPUT A$28
67 PRINT"WHAT'S YOUR FAVOURITE PERSON?
68 INPUT A$29
69 PRINT"WHAT'S YOUR FAVOURITE PLACE?
70 INPUT A$30
71 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
72 INPUT A$31
73 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
74 INPUT A$32
75 PRINT"WHAT'S YOUR FAVOURITE SONG?
76 INPUT A$33
77 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
78 INPUT A$34
79 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
80 INPUT A$35
81 PRINT"WHAT'S YOUR FAVOURITE FILM?
82 INPUT A$36
83 PRINT"WHAT'S YOUR FAVOURITE BOOK?
84 INPUT A$37
85 PRINT"WHAT'S YOUR FAVOURITE PERSON?
86 INPUT A$38
87 PRINT"WHAT'S YOUR FAVOURITE PLACE?
88 INPUT A$39
89 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
90 INPUT A$40
91 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
92 INPUT A$41
93 PRINT"WHAT'S YOUR FAVOURITE SONG?
94 INPUT A$42
95 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
96 INPUT A$43
97 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
98 INPUT A$44
99 PRINT"WHAT'S YOUR FAVOURITE FILM?
100 INPUT A$45
101 PRINT"WHAT'S YOUR FAVOURITE BOOK?
102 INPUT A$46
103 PRINT"WHAT'S YOUR FAVOURITE PERSON?
104 INPUT A$47
105 PRINT"WHAT'S YOUR FAVOURITE PLACE?
106 INPUT A$48
107 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
108 INPUT A$49
109 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
110 INPUT A$50
111 PRINT"WHAT'S YOUR FAVOURITE SONG?
112 INPUT A$51
113 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
114 INPUT A$52
115 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
116 INPUT A$53
117 PRINT"WHAT'S YOUR FAVOURITE FILM?
118 INPUT A$54
119 PRINT"WHAT'S YOUR FAVOURITE BOOK?
120 INPUT A$55
121 PRINT"WHAT'S YOUR FAVOURITE PERSON?
122 INPUT A$56
123 PRINT"WHAT'S YOUR FAVOURITE PLACE?
124 INPUT A$57
125 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
126 INPUT A$58
127 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
128 INPUT A$59
129 PRINT"WHAT'S YOUR FAVOURITE SONG?
130 INPUT A$60
131 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
132 INPUT A$61
133 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
134 INPUT A$62
135 PRINT"WHAT'S YOUR FAVOURITE FILM?
136 INPUT A$63
137 PRINT"WHAT'S YOUR FAVOURITE BOOK?
138 INPUT A$64
139 PRINT"WHAT'S YOUR FAVOURITE PERSON?
140 INPUT A$65
141 PRINT"WHAT'S YOUR FAVOURITE PLACE?
142 INPUT A$66
143 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
144 INPUT A$67
145 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
146 INPUT A$68
147 PRINT"WHAT'S YOUR FAVOURITE SONG?
148 INPUT A$69
149 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
150 INPUT A$70
151 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
152 INPUT A$73
153 PRINT"WHAT'S YOUR FAVOURITE FILM?
154 INPUT A$74
155 PRINT"WHAT'S YOUR FAVOURITE BOOK?
156 INPUT A$75
157 PRINT"WHAT'S YOUR FAVOURITE PERSON?
158 INPUT A$76
159 PRINT"WHAT'S YOUR FAVOURITE PLACE?
160 INPUT A$77
161 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
162 INPUT A$78
163 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
164 INPUT A$79
165 PRINT"WHAT'S YOUR FAVOURITE SONG?
166 INPUT A$80
167 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
168 INPUT A$81
169 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
170 INPUT A$82
171 PRINT"WHAT'S YOUR FAVOURITE FILM?
172 INPUT A$83
173 PRINT"WHAT'S YOUR FAVOURITE BOOK?
174 INPUT A$84
175 PRINT"WHAT'S YOUR FAVOURITE PERSON?
176 INPUT A$85
177 PRINT"WHAT'S YOUR FAVOURITE PLACE?
178 INPUT A$86
179 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
180 INPUT A$87
181 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
182 INPUT A$88
183 PRINT"WHAT'S YOUR FAVOURITE SONG?
184 INPUT A$89
185 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
186 INPUT A$90
187 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
188 INPUT A$91
189 PRINT"WHAT'S YOUR FAVOURITE FILM?
190 INPUT A$92
191 PRINT"WHAT'S YOUR FAVOURITE BOOK?
192 INPUT A$93
193 PRINT"WHAT'S YOUR FAVOURITE PERSON?
194 INPUT A$94
195 PRINT"WHAT'S YOUR FAVOURITE PLACE?
196 INPUT A$95
197 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
198 INPUT A$96
199 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
200 INPUT A$97
201 PRINT"WHAT'S YOUR FAVOURITE SONG?
202 INPUT A$98
203 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
204 INPUT A$99
205 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
206 INPUT A$100
207 PRINT"WHAT'S YOUR FAVOURITE FILM?
208 INPUT A$101
209 PRINT"WHAT'S YOUR FAVOURITE BOOK?
210 INPUT A$102
211 PRINT"WHAT'S YOUR FAVOURITE PERSON?
212 INPUT A$103
213 PRINT"WHAT'S YOUR FAVOURITE PLACE?
214 INPUT A$104
215 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
216 INPUT A$105
217 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
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219 PRINT"WHAT'S YOUR FAVOURITE SONG?
220 INPUT A$107
221 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
222 INPUT A$108
223 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
224 INPUT A$109
225 PRINT"WHAT'S YOUR FAVOURITE FILM?
226 INPUT A$110
227 PRINT"WHAT'S YOUR FAVOURITE BOOK?
228 INPUT A$111
229 PRINT"WHAT'S YOUR FAVOURITE PERSON?
230 INPUT A$112
231 PRINT"WHAT'S YOUR FAVOURITE PLACE?
232 INPUT A$113
233 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
234 INPUT A$114
235 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
236 INPUT A$115
237 PRINT"WHAT'S YOUR FAVOURITE SONG?
238 INPUT A$116
239 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
240 INPUT A$117
241 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
242 INPUT A$118
243 PRINT"WHAT'S YOUR FAVOURITE FILM?
244 INPUT A$119
245 PRINT"WHAT'S YOUR FAVOURITE BOOK?
246 INPUT A$120
247 PRINT"WHAT'S YOUR FAVOURITE PERSON?
248 INPUT A$121
249 PRINT"WHAT'S YOUR FAVOURITE PLACE?
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251 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
252 INPUT A$123
253 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
254 INPUT A$124
255 PRINT"WHAT'S YOUR FAVOURITE SONG?
256 INPUT A$125
257 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
258 INPUT A$126
259 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
260 INPUT A$127
261 PRINT"WHAT'S YOUR FAVOURITE FILM?
262 INPUT A$128
263 PRINT"WHAT'S YOUR FAVOURITE BOOK?
264 INPUT A$129
265 PRINT"WHAT'S YOUR FAVOURITE PERSON?
266 INPUT A$130
267 PRINT"WHAT'S YOUR FAVOURITE PLACE?
268 INPUT A$131
269 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
270 INPUT A$132
271 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
272 INPUT A$133
273 PRINT"WHAT'S YOUR FAVOURITE SONG?
274 INPUT A$134
275 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
276 INPUT A$135
277 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
278 INPUT A$136
279 PRINT"WHAT'S YOUR FAVOURITE FILM?
280 INPUT A$137
281 PRINT"WHAT'S YOUR FAVOURITE BOOK?
282 INPUT A$138
283 PRINT"WHAT'S YOUR FAVOURITE PERSON?
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923 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
924 INPUT A$725
925 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
926 INPUT A$727
927 PRINT"WHAT'S YOUR FAVOURITE FILM?
928 INPUT A$729
929 PRINT"WHAT'S YOUR FAVOURITE BOOK?
930 INPUT A$731
931 PRINT"WHAT'S YOUR FAVOURITE PERSON?
932 INPUT A$733
933 PRINT"WHAT'S YOUR FAVOURITE PLACE?
934 INPUT A$735
935 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
936 INPUT A$737
937 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
938 INPUT A$739
939 PRINT"WHAT'S YOUR FAVOURITE SONG?
940 INPUT A$741
941 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
942 INPUT A$743
943 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
944 INPUT A$745
945 PRINT"WHAT'S YOUR FAVOURITE FILM?
946 INPUT A$747
947 PRINT"WHAT'S YOUR FAVOURITE BOOK?
948 INPUT A$749
949 PRINT"WHAT'S YOUR FAVOURITE PERSON?
950 INPUT A$751
951 PRINT"WHAT'S YOUR FAVOURITE PLACE?
952 INPUT A$753
953 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
954 INPUT A$755
955 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
956 INPUT A$757
957 PRINT"WHAT'S YOUR FAVOURITE SONG?
958 INPUT A$759
959 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
960 INPUT A$761
961 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
962 INPUT A$763
963 PRINT"WHAT'S YOUR FAVOURITE FILM?
964 INPUT A$765
965 PRINT"WHAT'S YOUR FAVOURITE BOOK?
966 INPUT A$767
967 PRINT"WHAT'S YOUR FAVOURITE PERSON?
968 INPUT A$769
969 PRINT"WHAT'S YOUR FAVOURITE PLACE?
970 INPUT A$771
971 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
972 INPUT A$773
973 PRINT"WHAT'S YOUR FAVOURITE NUMBER?
974 INPUT A$775
975 PRINT"WHAT'S YOUR FAVOURITE SONG?
976 INPUT A$777
977 PRINT"WHAT'S YOUR FAVOURITE ACTIVITY?
978 INPUT A$779
979 PRINT"WHAT'S YOUR FAVOURITE ANIMAL?
980 INPUT A$781
981 PRINT"WHAT'S YOUR FAVOURITE FILM?
982 INPUT A$783
983 PRINT"WHAT'S YOUR FAVOURITE BOOK?
984 INPUT A$785
985 PRINT"WHAT'S YOUR FAVOURITE PERSON?
986 INPUT A$787
987 PRINT"WHAT'S YOUR FAVOURITE PLACE?
988 INPUT A$789
989 PRINT"WHAT'S YOUR FAVOURITE COLOUR?
990 INPUT A$791
9
```

How to dump the contents of your screen to your printer.
By Iain Murray

AUTO SCREEN DUMPER

This program enables you to dump the contents of your TV screen to a dot matrix printer. It uses, independently of BASIC, memory located, allowing you to load up another program and dump screens from it. The program listing is of a BASIC loader which loads and executes the machine code routine.

How it works

BASIC program

1000 REM load, run and check machine code data
1010 REM execute routine
1020 REM print characters of machine code
1030 REM BASIC loader (resets
key to SAVT before running)
1040-1050 machine code data

Machine code

On execution, the routine converts and uses the standard space of the dot matrix printer to dump each byte of a memory in blocks of 16. It then prints the key of the function control keys on the keyboard being pressed, and if found, the selected machine code from the memory space and dumps the screen contents. A character is read from the screen and converted to an ASCII value to be passed to the printer.

1 > USING ~~SCREEN P~~

1000 COMMODORE 64 BASIC V2 4000
64K RAM SYSTEM 38911 BASIC BYTES FREE
READY,
LOAD 'AUTO SCREEN DUMP'.
PRESS PLAY ON TAPE
ON

SEARCHING FOR AUTO SCREEN DUMP
FOUND AUTO SCREEN DUMP
LOADING
READY.
LIST-39

10 REM 1000 AUTO SCREEN DUMPER #4000
20 REM #4000 C64 IAIN MURRAY 1985 #4000
30 REM #4000 FOR HOME COMPUTING HEAVILY #4000

READY.
RUN#

Once all characters have been passed, a carriage return is output and the routine continues until the whole screen has been output. The routine then places itself back into the memory space. While printing the screen, execution of the routine program will be suspended, and this will be resumed when the routine has finished its task.

Instructions for use

Type in and LOAD the BASIC loader from ROM and it will return control, the control codes for use will be printed and the program will clear from memory. If you like, you can simply hold down the CTRL key and press the desired letter for selection, except you want them in a different

CTRL F. This causes an 8 byte pause, the normal printing mode will resume as the printer even if user-defined characters are shown on the screen.

CTRL W. This causes with no delay between lines of 1000, and would be used for printing graphics, etc.

CTRL D. As for CTRL F except that the print is printed in double width mode.

CTRL B. As for CTRL W except that the print is printed full double width and without line spacing.

The printer can be used at any time while running a BASIC or

machine code program. The program will keep running while the printer is printing. This complements the user program will appear. However please note the following restrictions on the use of the routine:

1. The routine can be on the middle of the block of free RAM (i.e. above the normal BASIC memory, beginning at \$2000 and this area should not be used by any programs, loaded programs, ROMS, etc).

2. Any programs which share the memory space will cause the printer to become unusable. Printing, RUN/STOP, and RESTORE will also cease to function. Type C64 C64 to return the routine.

3. The routine passes ASCII character codes to the printer, the output is normal characters and appear as the printer even if user-defined characters are shown on the screen.

4. Pressing one of the control's control codes without a print selected at any level, the print screen display will be lost.

With an interface

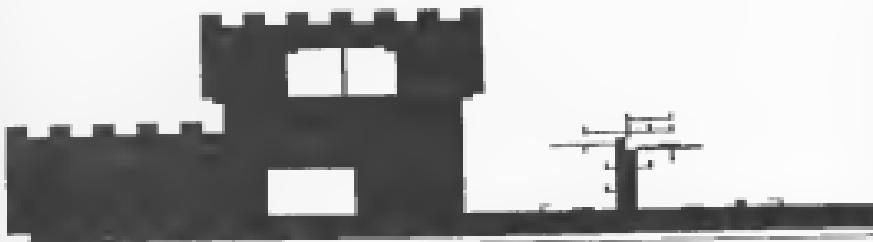
that is, switching-specific addressed, the program could be defined or written to another computer. The program requires to always receive first and the machine code would have to be in a series of memory mapped devices were required.

第二章 機器視聽與聽覺

PLEASE WAIT WHILE I LOAD IN THE DATA
SCREEN DUMPER NOW ACTIVATED
SELECT P - NORMAL PRINTING
SELECT H - NO SPACES BETWEEN LINES
SELECT D - DOUBLE WIDTH CHARACTERS
SELECT D - BOTH WIDE CHARACTERS AND NO
SPACES BETWEEN LINES

REFERENCES

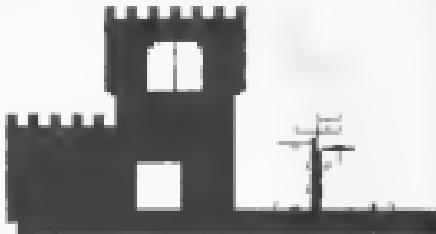
42 LIVING WITH D



250 HOM

10000 DATA 985-173, 141, 2-201, 4, 200, 240, 163
 10100 DATA 8, 141, 2, 204, 141, 3, 204, 163, 137
 10200 DATA 201, 41, 240, 38-201, 3-200, 8, 163
 10300 DATA 1, 141-2, 204, 763, 621, 204, 201, 13
 10400 DATA 200, 8, 163, 1, 141, 3-204, 76, 62
 10500 DATA 204, 201, 20, 200, 200, 163, 1-141, 2
 10600 DATA 201, 141, 3-204, 163, 163-49, 141
 10700 DATA 201-3, 163, 204-314, 21, 13, 173, 24
 10800 DATA 201, 201, 21, 200, 5, 163, 49, 76, 67
 10900 DATA 204, 163, 7, 163, 4, 179, 32, 200, 200
 11000 DATA 162, 49, 52, 163, 200, 20, 163, 200
 11100 DATA 163, 4, 32, 201, 205, 163, 49, 163, 201
 11200 DATA 163, 4-1, 163, 202, 163, 8, 173, 3-204
 11300 DATA 200, 3-163, 14, 76, 120, 204, 163, 13
 11400 DATA 30, 200, 200, 177, 201, 201, 163, 16
 11500 DATA 16, 72, 163, 146, 32, 218, 200, 163
 11600 DATA 76, 137, 204, 72, 200, 163, 32, 200
 11700 DATA 201, 204, 24, 163, 120, 201, 24, 16
 11800 DATA 6, 34, 163, 54, 76, 200, 204, 201, 64
 11900 DATA 16, 9, 200, 204, 200, 27, 163, 37, 76
 12000 DATA 200, 204-201, 34, 200, 5, 163, 36, 76
 12100 DATA 201, 204-201, 36, 24, 163, 120
 12200 DATA 76, 202, 204, 24, 163, 64, 32, 200
 12300 DATA 200, 200, 163, 49, 200, 177, 204, 200
 12400 DATA 40, 163, 253, 120, 201, 163, 6-57
 12500 DATA 201, 132, 200, 177, 2-204, 200-163

22 > LOG IN 1403 1993 2000 34



13100 DATA 13-32-216, 203, 163, 13, 32-216
 13200 DATA 200, 32-231, 235, 163, 163-39, 141
 13300 DATA 201, 1, 163, 205, 143, 21, 3, 68, 56, 18
 13400 DATA 72, 163, 72-138, 72-32, 6, 204, 164
 13500 DATA 170, 164, 163, 164, 46, 76, 43, 234

SHEKHANA COMPUTER SERVICES

Category	Product	Processor	Memory	Storage	Power	Display	Keyboard	Mouse	Other
1. Laptops	1.1. Dell XPS M1330	Intel Core i5-2410M	8GB RAM	500GB HDD	65W AC Adapter	13.3" LED Backlit	Full Size	Optical	1.2. Microsoft Surface Pro 3
2. Desktops	2.1. Acer Aspire V3-771G	Intel Core i5-4460	8GB RAM	1TB HDD	200W Power Supply	21.5" Full HD	Full Size	Optical	2.2. HP Pavilion 570-1000
3. Monitors	3.1. BenQ GL2460HM	-	-	-	-	24" Full HD	Full Size	Optical	3.2. Dell S2412H
4. Peripherals	4.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	4.2. Razer DeathAdder
5. Software	5.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	5.2. Adobe Creative Cloud
6. Accessories	6.1. Belkin USB-C to USB-A	-	-	-	-	24" Full HD	Full Size	Optical	6.2. Logitech G Pro
7. Cases	7.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	7.2. Corsair K70
8. Peripherals	8.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	8.2. Razer DeathAdder
9. Software	9.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	9.2. Adobe Creative Cloud
10. Cases	10.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	10.2. Corsair K70
11. Peripherals	11.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	11.2. Razer DeathAdder
12. Software	12.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	12.2. Adobe Creative Cloud
13. Cases	13.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	13.2. Corsair K70
14. Peripherals	14.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	14.2. Razer DeathAdder
15. Software	15.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	15.2. Adobe Creative Cloud
16. Cases	16.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	16.2. Corsair K70
17. Peripherals	17.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	17.2. Razer DeathAdder
18. Software	18.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	18.2. Adobe Creative Cloud
19. Cases	19.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	19.2. Corsair K70
20. Peripherals	20.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	20.2. Razer DeathAdder
21. Software	21.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	21.2. Adobe Creative Cloud
22. Cases	22.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	22.2. Corsair K70
23. Peripherals	23.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	23.2. Razer DeathAdder
24. Software	24.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	24.2. Adobe Creative Cloud
25. Cases	25.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	25.2. Corsair K70
26. Peripherals	26.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	26.2. Razer DeathAdder
27. Software	27.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	27.2. Adobe Creative Cloud
28. Cases	28.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	28.2. Corsair K70
29. Peripherals	29.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	29.2. Razer DeathAdder
30. Software	30.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	30.2. Adobe Creative Cloud
31. Cases	31.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	31.2. Corsair K70
32. Peripherals	32.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	32.2. Razer DeathAdder
33. Software	33.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	33.2. Adobe Creative Cloud
34. Cases	34.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	34.2. Corsair K70
35. Peripherals	35.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	35.2. Razer DeathAdder
36. Software	36.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	36.2. Adobe Creative Cloud
37. Cases	37.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	37.2. Corsair K70
38. Peripherals	38.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	38.2. Razer DeathAdder
39. Software	39.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	39.2. Adobe Creative Cloud
40. Cases	40.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	40.2. Corsair K70
41. Peripherals	41.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	41.2. Razer DeathAdder
42. Software	42.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	42.2. Adobe Creative Cloud
43. Cases	43.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	43.2. Corsair K70
44. Peripherals	44.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	44.2. Razer DeathAdder
45. Software	45.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	45.2. Adobe Creative Cloud
46. Cases	46.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	46.2. Corsair K70
47. Peripherals	47.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	47.2. Razer DeathAdder
48. Software	48.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	48.2. Adobe Creative Cloud
49. Cases	49.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	49.2. Corsair K70
50. Peripherals	50.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	50.2. Razer DeathAdder
51. Software	51.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	51.2. Adobe Creative Cloud
52. Cases	52.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	52.2. Corsair K70
53. Peripherals	53.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	53.2. Razer DeathAdder
54. Software	54.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	54.2. Adobe Creative Cloud
55. Cases	55.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	55.2. Corsair K70
56. Peripherals	56.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	56.2. Razer DeathAdder
57. Software	57.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	57.2. Adobe Creative Cloud
58. Cases	58.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	58.2. Corsair K70
59. Peripherals	59.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	59.2. Razer DeathAdder
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62. Peripherals	62.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	62.2. Razer DeathAdder
63. Software	63.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	63.2. Adobe Creative Cloud
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65. Peripherals	65.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	65.2. Razer DeathAdder
66. Software	66.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	66.2. Adobe Creative Cloud
67. Cases	67.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	67.2. Corsair K70
68. Peripherals	68.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	68.2. Razer DeathAdder
69. Software	69.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	69.2. Adobe Creative Cloud
70. Cases	70.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	70.2. Corsair K70
71. Peripherals	71.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	71.2. Razer DeathAdder
72. Software	72.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	72.2. Adobe Creative Cloud
73. Cases	73.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	73.2. Corsair K70
74. Peripherals	74.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	74.2. Razer DeathAdder
75. Software	75.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	75.2. Adobe Creative Cloud
76. Cases	76.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	76.2. Corsair K70
77. Peripherals	77.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	77.2. Razer DeathAdder
78. Software	78.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	78.2. Adobe Creative Cloud
79. Cases	79.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	79.2. Corsair K70
80. Peripherals	80.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	80.2. Razer DeathAdder
81. Software	81.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	81.2. Adobe Creative Cloud
82. Cases	82.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	82.2. Corsair K70
83. Peripherals	83.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	83.2. Razer DeathAdder
84. Software	84.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	84.2. Adobe Creative Cloud
85. Cases	85.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	85.2. Corsair K70
86. Peripherals	86.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	86.2. Razer DeathAdder
87. Software	87.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	87.2. Adobe Creative Cloud
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92. Peripherals	92.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	92.2. Razer DeathAdder
93. Software	93.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	93.2. Adobe Creative Cloud
94. Cases	94.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	94.2. Corsair K70
95. Peripherals	95.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	95.2. Razer DeathAdder
96. Software	96.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	96.2. Adobe Creative Cloud
97. Cases	97.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	97.2. Corsair K70
98. Peripherals	98.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	98.2. Razer DeathAdder
99. Software	99.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	99.2. Adobe Creative Cloud
100. Cases	100.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	100.2. Corsair K70
101. Peripherals	101.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	101.2. Razer DeathAdder
102. Software	102.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	102.2. Adobe Creative Cloud
103. Cases	103.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	103.2. Corsair K70
104. Peripherals	104.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	104.2. Razer DeathAdder
105. Software	105.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	105.2. Adobe Creative Cloud
106. Cases	106.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	106.2. Corsair K70
107. Peripherals	107.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	107.2. Razer DeathAdder
108. Software	108.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	108.2. Adobe Creative Cloud
109. Cases	109.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	109.2. Corsair K70
110. Peripherals	110.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	110.2. Razer DeathAdder
111. Software	111.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	111.2. Adobe Creative Cloud
112. Cases	112.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	112.2. Corsair K70
113. Peripherals	113.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	113.2. Razer DeathAdder
114. Software	114.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	114.2. Adobe Creative Cloud
115. Cases	115.1. Razer Kraken X	-	-	-	-	24" Full HD	Full Size	Optical	115.2. Corsair K70
116. Peripherals	116.1. Logitech G910	-	-	-	-	24" Full HD	Full Size	Optical	116.2. Razer DeathAdder
117. Software	117.1. Microsoft Office 365	-	-	-	-	24" Full HD	Full Size	Optical	117.2. Adobe Creative Cloud

BACK TO BASICS

Jersey resident Colin Wilton-Davies invites you to draw a mermaid using Spectrum BASIC — and win a game

We ended up last time with a program of a sailing boat on a very calm sea, under a sunny sky. I hope that by this time most of you will have played around a bit with the simple line-drawing statements and, and will have produced a few of the run-of-the-mill shapes which great a sailor's eye such as rectangles, stars, diamonds, rough seas and rainbows — you can join I hope my eyes open when I was at sea, can't you?

Let's just a little competition. Write a program in Spectrum BASIC to draw a mermaid and send it in to me care of ZCWC. I'd prefer entries on cassette or Microdrive to save time, and these will be returned to you if you include a self-addressed label. No enclosures — we're not your old fashioned in Jersey.

If you don't send a cassette with the program, your entry should be in the form of a PRINTED letter with a cassette dump of the source just the COPY command on the 2 key. The writer of the best letter in my opinion will receive a copy of my Tradewind game, and will be able to complete the exciting series of three offered with my first sail ship. Entries must be in ZCWC within 28 days of the publication date of this article.

When you're sailing, even with autopilot open, the righting of boats and movement in a series of lock or choices, and it is common to decide the outcome of a race on the theory of dice or the toss of a coin. The equivalent of that in a Spectrum

BASIC game is the RND function, located on the T key in standard mode.

Enter in a clean command RND, and a number like 0.00123456 will appear on the screen. You can do this a lot of times before you will see the same number again, if you don't believe me, RUN this short program:

```
100 FOR z=1 TO 100
100 PRINT RND
100 NEXT z
```

You will print a series of 100 numbers and below the other 100 there will be 100 lines of text on the screen, the Spectrum very politely waits when there are 22 on the screen and says "please". If you press SHIFT F, ERASE or N, this will interrupt the program at this point, any other key will cancel the numbers up to the cursor and the next 22 lines appear. I'll be very surprised if you find two identical numbers, but you won't find any smaller than one or quite so big as one.

The numbers are actually generated by means of a complex formula, so are not truly random. Mathematically, they are "pseudo-random" numbers between zero and one, which sounds prettier than saying you are drawing a line with more than a million colors, but makes it sound the same though! The formula used starts with a "seed" in the Spectrum's memory which is a value of the number of BY bytes generated since it was switched on. If for some reason you want the random numbers to follow the same sequence (there's a contradiction, you can do this by using the RANDOMIZE command, which is also on the T key. Change the little program above so that the first line is

```
100 FOR z=1 TO 3
```

and each time you RUN it, you will get a different group of numbers. How smart.

90 RANDOMIZE 10

and you will get the same sequence of pseudo-random numbers each time. These numbers are conveniently used for many programs such as calculating the theory of odds, if you say.

```
100 FOR z=1 TO 6
100 LET n=RND*6
```

100 PRINT n
100 NEXT z

You will get seven, so the sort of thing you would expect from throwing a die six times. Insert the last

100 LET n=INT(n)

and you will get seven with the function INT in short for INTEGER, or whole number. What it does is to keep the part of a number less than 23.45, which is greater than one (1.0) and discard the rest (1.45), which is called the fractional part. Some dialects of BASIC have a FRAC function, which is the opposite of INT. The Spectrum doesn't have that, you would use something like:

LET frac = n - INT(n)

Anyway, you will probably find some errors in the sequence, and you certainly won't flip-flop over, so to make a more like that choosing you need and

100 LET n=rnd + 1

and you have a pretty good imitation of the throwing of a die. If you prefer, the line can be packed into one line

100 LET n=INT (RND*6) + 1

and you can strip lines 100 to 100 inclusive.

Many professional board games, including a well-known computer chess game, use two dice, and some games use three (yes, that's right, three dice). For example, poker dice are thrown in five. Now it would be easy but wasteful to program five separate sequences of lines to generate appropriate random numbers and associate them with card names. It's very common in computing to use jobs (jobs or recall) which have to be done repeatedly and sometimes by different parts of a program. These jobs are called "subroutines" and are accessed by the "GO SUB" statement. The end of the job is recognized by the command "END" or a "RETURN" statement, which causes program control to return to the statement following the GO SUB. Let's suppose we have a game in which ordinary and poker dice are to be used.

```

S
100 REM mixed dice program
110 GO SUB 2000: REM throw dice
120 CLR
130 BORDER 4
140 PRINT "YOU THREW A " + S
150 STOP
160 REM die throw routine
170 LET S=INT(URND(1,6))
180 RETURN

```

and you have a simple die-throwing subroutine which tells you who you threw and changes the border colour to match. Now add:

```

190 PRINT "YOU ALSO THREW " + T
200 FOR C=1 TO 9
210 GO SUB 1000: REM throw dice

```

C T R U M

```

120 GO SUB 2000: REM a poker 4th
130 NEXT C
2000 REM poker die routine
2010 IF C=1 THEN PRINT "A KING"
2020 IF C=2 THEN PRINT "A TEN"
2030 IF C=3 THEN PRINT "A JACK"
2040 IF C=4 THEN PRINT "A QUEEN"
2050 IF C=5 THEN PRINT "A KING"
2060 IF C=6 THEN PRINT "AN ACE"
2070 RETURN

```

Now you have the nucleus of a gambling game which I will leave to you to build up into something more interesting. You could use subroutines to play a different game for each "card", or to draw different pictures. If this impresses a betting game, a royalty of one per cent would be very acceptable!

Programs are always supplied on cassette and are accompanied by full details of the program variables, how the program works and any hints on conversion you can offer. Please type these details double spaced. Listings are helpful but not essential. What is vital is that the programs should be completely error free, so please double check.

Always use a coupon firmly fixed to the back of your envelope, and fully complete and enclose the cassette tape card.

We are particularly interested in programs with less than 100 actual lines of BASIC. All submissions are acknowledged.

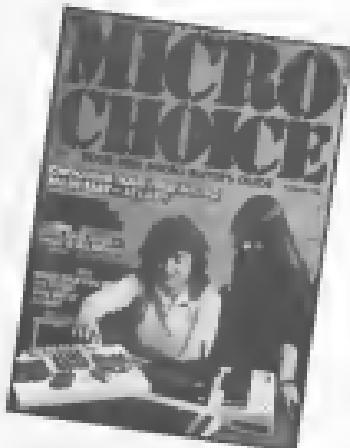
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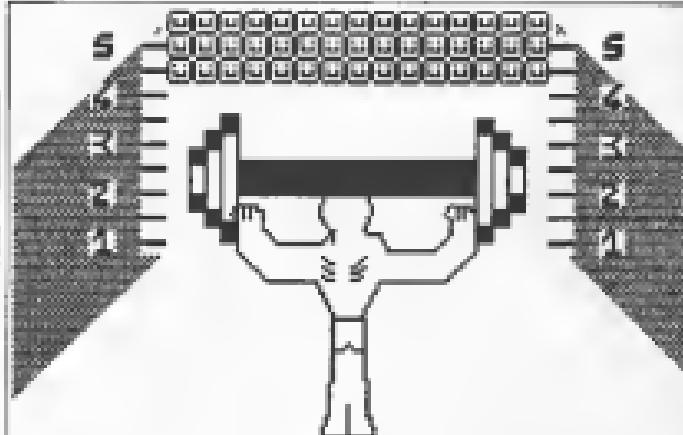


APPOINTED
DEALER

PARCO
Electrics

PARCO ELECTRICS 44-46 VICTORIA PLACE
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MUSCLE BOUND



TIME

STAMINA

Get a buzz from pumping iron? Now's your chance to beat Geoff Capes, In *Andrew Ellison's* program for the Spectrum

You're measuring up to Geoff Capes in the weight-lifting game. He recently holds the world record of a height of five inches, and if you can beat that you'll be declared new world champion weight lifter.

You're watched by an expert panel of questioners, so give your best performance. Your time and station choices are random, and your efforts are rewarded by the draw-back-ups at the bottom of the screen. You're aiming for three draws.

Don't use any keys just
watch yourself. All you have to
do is just Qwerty Caps — and
the rest is history.

• 100 •

24. **vertical position of leg**
25. **horizontal position of leg**
26. **drum major**

After 30 weeks
10-40% above weight
100-200 above mass
1000-2000 LBBG
1000-1000 above age
1000-1000 Pseudolab for age

Most of the weights in a set of numbers have one or two distinguishing features. You can either fix the speed at which the weights are lifted by changing the original numbers in the set.



SQUASHED FROG

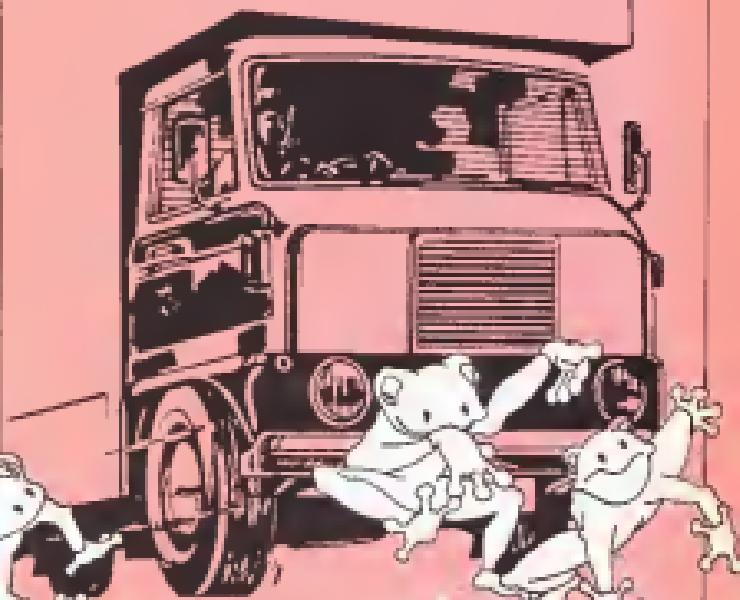


Avoid the pounding berries in this obstacle game by Paul Burke

In the course of the well-known, world games you secured the flag, in an effort to reach safety.

Turn right out at the side of the road. Triffle is speeding by in both directions. Hang across the road avoiding the cars and horses until you reach the river bank. Now jump on to the floating logs. Be careful not to fall in the river, as this means death.

Finally, jump into a car at the top of the screen and you will receive 100 points when it



new home. When all the doors are occupied you get a 1000 point bonus and go back to the start, the reality and logic however now rules a little more. You are allowed a maximum of 30 seconds to get each new home. You can still with three lives and win a prize but every second spent within the game rules, if you have a high score you can enter your name in the top table which is the last few lines of the day. Contests are T forward, H, para, N, back, E, etc.

To start the game press any key.

1000

- A. width of section (22)
- C. difference between mean and median summary (0.0125)
- E. number of sampled data
- G. still level the lower is at the lower the greater is
- I. number of bars (6)
- K. 100%
- M-1. about 10000
- N-1. single mean
- Q. TIG's own answer

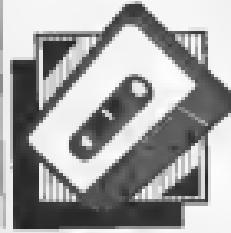
- T, R, X: general purpose variables
- V: volume control
- (A): averaged data and
- (I): high current array
- H: high current H- array
- W: wiggly or CTF experiments
- W: contains a list of random startings
- G: used for free protonic emission
- TR: TR is on a logical clock
- TM: contains (TMNAME, TMNAME, TMNAME)

How is mental

- 3.13: computer capabilities and memory
- 3.14: an example for a linear program
- 4: display function of lines 7-9
- 5.1: swap part of lines 11-12
- 5.2: lines 13-14 and loops and functions 15-16
- 2.14: read from computer
- 15.19: loop for a restricted decision process
- 15.21: all done filled
- 15.29: set up screen
- 15.31: graphical machine code variables
- 15.32: routine to print the three characters in OB
- 15.45: some error and high control table position



QUAD WRANGLE



**Mutant beachballs
are out to crush
you. Can you
survive?**

By Stephen Gray

An evil wizard has changed you into a bear and put you at night's end. Your task is to change the land's colour by jumping on the squares. There's jump off the land — it's a long step, and beware of the snarling beach bats which pounce down to attack you.

Boys:
North were 8,
Middle were 2,
South were 2,
South were 7.

New Friends	
20-30	new student
30-40	new family
40-50	new neighbor
50-60	new co-worker
60-70	new service subscriber



1990-1991 all no repeat sub
program
1991-1992 draw states of repeat
subprogram
1992-1993 subprogram
1993-1994
1994-1995 more new states
1995-1996 more new states
1996-1997 more new states
1997-1998
1998-1999 displaying high scores
subprogram
1999-2000 draw more subprograms

100

1.4% local
1.2% urban
0.7% global or rural
0.6% regional, 0.5% local

```
10 REM ***** BASIC *****  
20 REM * By www.romain.com *  
30 REM * 8080 CPU *  
40 REM * 64K RAM *  
50 REM * 64K ROM *  
60 REM * 64K ROM *  
70 REM * 64K ROM *  
80 REM * 64K ROM *  
90 REM * 64K ROM *  
100 REM * 64K ROM *  
110 REM * 64K ROM *  
120 REM * 64K ROM *  
130 REM * 64K ROM *  
140 REM * 64K ROM *
```




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Just a few examples of our latest stock. Photo for details.

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IF YOU USE YOUR COMPUTER TO
PLAY GAMES, THEN YOU CAN'T
AFFORD TO MISS.

Computer

COMPUTER GAMER

This fantastic new magazine appears on March 22 1985 and on the fourth Friday of every month after at the price of 99p.

Each issue will be produced in cooperation with Betaan, our Interplanetary Adviser who on his home planet, Aerogen, is a member of the Association of Supreme Players. He will be monitoring developments in the games industry and advising Computer Gamer readers with all their gaming problems. Included in each issue will be pages of review of the latest games releases, special Adventure features and a help-line, invaluable articles on how to 'crack' specific games a high-score page, exciting programs to type in for most of the popular home computers, news, competitions, reviews of peripherals and computers themselves if relevant to the games field and LOTS more.



Also, all readers of Computer Gamer will have the opportunity to join our tremendous Reader's Club — each member will receive a membership card and a regular newsletter which will contain up-to-the-minute news and all sorts of offers on a variety of products.

So all-in-all there's no way you can afford to be left out of the great new revolution in games computing — rush out and buy your copy NOW!

You cannot be serious!!



About software, that is! Or at least you can't until you've made an intelligent decision about hardware.

Computer Printers? Disc drives? Joysticks? Peripherals? Extra RAM?

Even, there's a serious danger of going crazy just trying to understand the choices. Let alone coming to an intelligent decision.

Micro Choice is your answer. Every quarter it collects a range of hardware reports so that you can make your own choice of micro or odd-one.

Then you can forget about being too serious and start having fun. Easy when you think about it, isn't it?

**MICRO
CHOICE**

A photograph of a software library membership card. The card is rectangular with a dark border and features a small image of a computer monitor in the upper left corner. The text on the card includes 'Software Library' and 'Membership Card'. Below the card, there is a large, bold, sans-serif font that reads 'FREE SOFTWARE FOR LIFE!'.

New Gold Star! We membership at The Software Library is just like a library membership. It's a regular reading card for all the books and periodicals you want to borrow. There's a little box, and a full week's rental won't cost you a penny to have fun!

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MAKE LIFE EASIER



Shingo Seguro continues his series on user-defined characters — and shows you some short cuts.

As I emphasized in my last article, user-defined subroutines are very useful for game programs and are easy to make. However, the process is time-consuming and it would be nice if some type could define the subroutine directly from graphics, pages with point-super-having-to-fit-in-the-expression boxes, and the iterative calculating and testing for each row. Well, a program does just that, will be presented in several issues over the coming weeks. In each article, a section will be thoroughly explained. So it should prove a useful programming technique as well as programming joy with an innumerable variety.

First we must decide what feedback we want from this utility program. Obviously, we must be able to derive a character on an indexed position. We also want it to be shown as null space, so we design the character as a rendered model. The base of this program is a large grid grid in which you can move about via the cursor keys and each dot may be filled in or deleted with ease. While we are at it, we might as well print the character for reading.

Now that we've decided on the basis of this article, we need the "Truth". I have decided to make the overall headings such as these good, rather hasty, simple, accurate and correct. All these facilities must be used whenever we are.

Probably the most important
idea is this: that no

A dark, rectangular object, possibly a book or a folder, with a textured cover, is resting on a light-colored, textured surface. The object is positioned in the upper left corner of the frame.

allows you to save the characters in BASIC format, such as "1000 D033 334,335,336,34 - 36 33-41 336,34". This is useful if you do not have an character set and no font is to be replaced by some other.

I believe that open, but may be with a partition, is the right model, rather than to make the program an overall distinct segment. Also, definitely no GATT or GATT-like. Results, there is a lesson a big lesson over there and some people seem to avoid using GATT-like systems because they... Well, you can GATT-like, cover some program development and also make development a joint in the stock exchange of the mechanics of procedures or rules. BAKER, you can start running a program by a function of code such as the one shown below.

You can immediately see the superiority of the program and we, not having hardly written it, could in this step, see what PROCGenie "did", there abouts 1,000 PROCGenie "errors". These errors that could be easily avoided, were more than if you had a bug at a later stage, you can quickly track it down and fix it.

So to start off, I will leave you with the first few lines of the progress. As you can see it's just a series of PROC statements. All that's left is to end the various procedures. There's a for the week in my next article, it will go on to the main procedure.

1000

1. *Leptospiral* 2. *Leptospiral*
3. *Leptospiral* 4. *Leptospiral*
5. *Leptospiral* 6. *Leptospiral*
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47. *Leptospiral* 48. *Leptospiral*
49. *Leptospiral* 50. *Leptospiral*

PERIPHERAL

Richard Sealey
gives the thumbs-up
to Micro Pulse's
ROM Box

One of the BBC's most useful design points is its ability to use up to 16 plug ROMs. One of its weaker design faults is that these are only held in sockets provided for such programs, no memory. This means that many users have to wait for more ROM space and then in a whole range of options available, internal and external ROM boards, ROM cartridge systems and even RAM board systems which allow you to load such programs from disk instead of cassette. The exception is a whole range of these systems that save your needs and is available in the right place.

This product from Micro Pulse may seem slightly unusual at first glance. It is no normal ROM box with spaces for eight ROMs but only one of which can be used at a time. You might be concerned by some of a rather unusual concept. You have eight sockets and only one able to use itself.

I have to disagree. Having used this box for a number of weeks I find that not only does it fulfil a purpose but it can make life much easier for the average BBC user and reviewer.

The unit is supplied in a cream-coloured box, containing

data, instruction, data and address lines. Routing is completely well and the designation does not seem specific although a diagram might help those less familiar with the jargon.

The only leads from the right-hand side of the BBC case and can be tightly clamped into position when you screw the case back together. This then connects to the box via an additional, deplorable, two-pin socket. This is an upgrade feature as it makes the BBC easy to transport and the less well cables.

At the top right of each socket there is a red LED, which represents to the user which socket the ROM is in inserted. This is a good design feature and shows clearly through the perspex cover which program is ready for use. As all the ROMs are memory mapped into the same area and share a single memory location, they can be switched with the BBC power on and then called as required.

One of the weaker points is the unevenness from socket and the socket very easy exchange of ROMs with no damage possible to either ROM or board. You simply place it between the "pins" and then clamp them down. All the socketed sockets are of the usual mass board type but are of a very high quality.

I thought at first that the box would only take basic BBC ROMs, which you only use one at a time, and that it has a low memory need of 16. I find however that a rom also be

used very effectively with memory ROMs. The instructions say that you need to select the ROM and then press CTBL (ROMA) but I find that if you are certain you haven't chosen ROMA then this is unnecessary and you only need to call the routine you want. You do have to press BREAK when changing from one ROM to another, however.

In summary, I have to declare that this is a very well built and designed product. It seems a little expensive but is certainly the Robin Hayes of such units. All of the design features contribute to its simplicity and it will be of very great use to those who have a number of BBCs which they are occasionally but not enough to justify their taking space on the main board.

There are no problems of overwriting and none of the ROMs in the system I used interfere with any of the others. It can be used with any normal ROM board and allows you to take up to 12 boards, attached to the BBC, with 16 to use at any one time.

R S

Price: £29.95

Published: Micro Pulse

Address: Churchfield Rd, Poynton, Cheshire, WA6 8LD

BBC



Your jokes

Have you heard about the squirrel cheetah bar in the middle of the road? It was a carless trap.

Milly Burwell (Moulton)

Two eggs sitting in a pile of boiling hot water. One says to the other: "Can I have it? I'd like to have it!" The other egg replies: "Just wait till you get outside, they smash your head up!"

Wendy Palmer (Croydon)

What do you call a beaver-mouse that doesn't swim back? A stick.

Kerry Fowler (Cheadle Hulme)

What's green and red and spins round at 68 mph?

A frog in a juicer.

Pete Pease (Gatley)

Two cowboys were playing cowboys and Indians. Which one was the cowboy? Neither, they were both Indians.

Mark Collier (Blaenau Ffestiniog)

What do you call a Chinese woman with a foot mass on her hand? Bruce.

Mike Sargeant (London)

What do glow-worms eat? Light meals.

What do sheep and oak trees eat? Lambs. They both love a past.

What is the longest word in the English language?

Saints Quidnunc's a mile between the Fox and the Lorry.

The sky is full of holes. That's where rain comes in. The holes are very small. That's why rain is thin.

Daleks Royal (Birkdale)

What's the difference between a ZOO and a confederal base? A ZOO has wires coming out of the back.

Steve North (Brough)

Solution to last week's puzzle

The answer is 40.

The last number is formed from the first numbers before it, the next numbers which multiply the next digits, which make each number and then make each number, together add the next number together.

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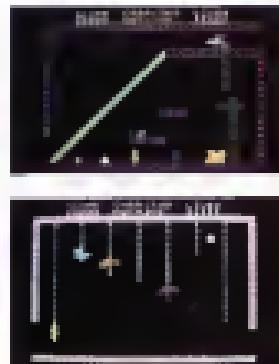
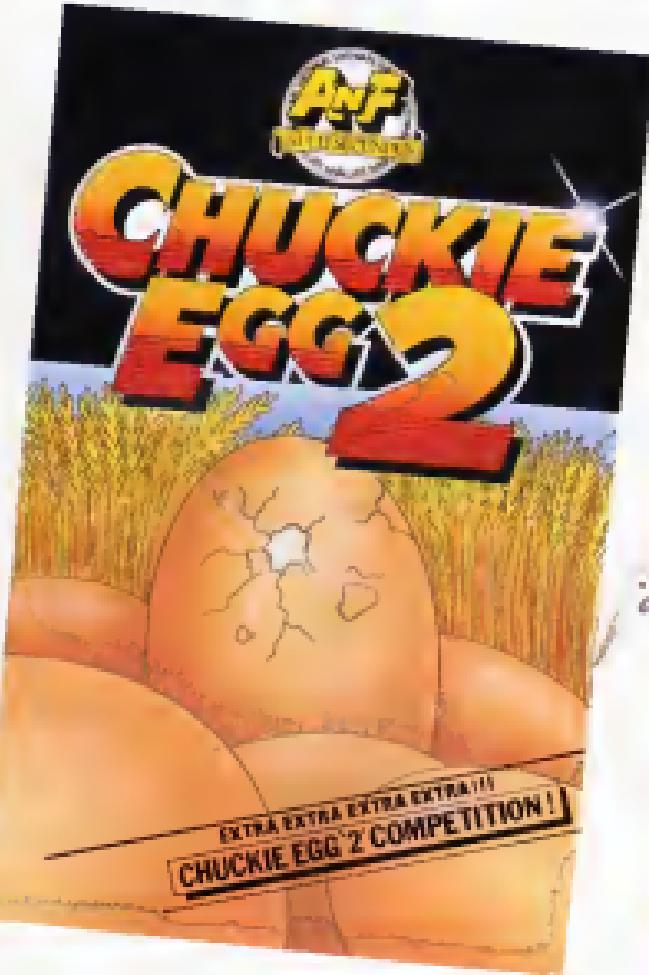
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